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COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

Vol. 33 MAY, 1933 No. 2

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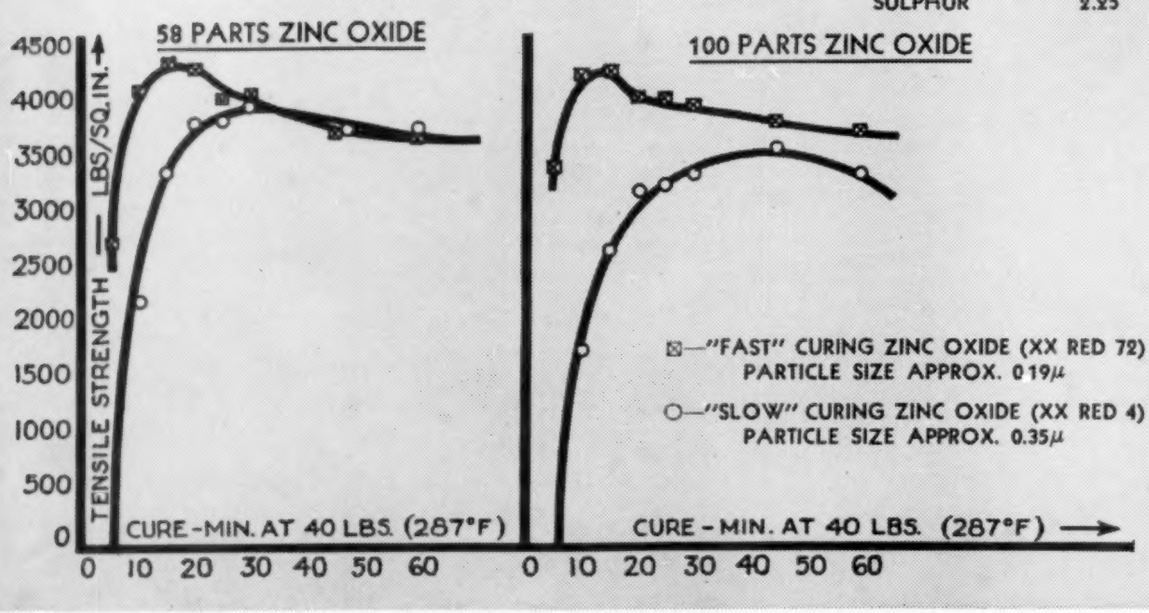

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The Rubber Trade Outlook for 1933

By E. G. HOLT
Chief of Rubber Division, Department of Commerce, Washington, D. C.

This paper was delivered by Mr. Holt at the Fifth Annual Meeting of the Ohio Conference of Statisticians in Akron on April 7, 1933, and is published here on account of its value as a summary of the crude rubber situation and trends in the foreign rubber trade. It is particularly timely in view of conditions in the commodity markets and the talk of restriction which is heard abroad.—EDITOR.

IN agreeing to discuss the subject of the rubber trade outlook of 1933, I suppose the role of prophecy is implied, but I intend to review the existing situation and indicate certain trends and possibilities rather than to venture predictions. As a certain writer on rubber and restriction says: "The goddess of rubber delights in the unexpected, and finds sport in the discomfiture of her prophets." I shall limit myself chiefly to matters of international trade, which is the special province of the Bureau of Foreign and Domestic Commerce.

We will first consider the crude rubber situation, and point out certain trends. The producers have already gone a long way toward readjustment. As a result of the low prices, the use of reclaimed rubber in America has declined from over 50% of the amount of crude consumed in 1928 to 23% last year, thus crude rubber has made gains at the expense of reclaim. The large estates have at the same time gained at the expense of the native producers; natives in the Netherland East Indies have reduced their output more than any other group, but the natives in Malaya show a much greater decline than estates in the same country. Finally, the weaker estates are gradually closing down, leaving the field to the stronger competitors. In Ceylon and India, where climatic conditions are less ideal for rubber cultivation than in the other rubber producing centers, estate outputs have declined much more than elsewhere. The general trend of production is downwards and there is only one outstanding exception—Indo-China.

Production in Indo-China has steadily increased under the financial support given by the French Government through a special fund to aid the planters. It may be a surprise that Indo-China has a higher percentage of its rubber average in budgrafted trees than any other country—28% of the total area and 38% of the immature area. The budgrafted area there was about 87,000 acres at the end of 1931, or about half the budgrafted area in Netherlands India two years earlier. The French claim, with plenty of statistical evidence, that seven years hence they will be producing 60,000 tons annually against 13,000 tons last year. Indo-China may sooner or later occupy the position of relative importance in rubber production now held by Ceylon and Ceylon may fall back to the position held up to now by Indo-China.

The question ever present in the minds of rubber growers and also purchasing agents is whether Government regulation of rubber production will again be resorted to. Personally, I do not think it will. A renewal of restriction would interfere with the completion of the readjustment which is progressing favorably in its absence, would be against the best interests of the most efficient producers, and would retard the growth of consumption that is gradually coming about. But because of the influence of restriction talk on price, I will discuss the possibilities.

Factors Favoring Restriction

The British Government abandoned the Stevenson scheme in 1928 only after a final failure to secure Dutch

cooperation, and their subsequent attitude has been clearly one of readiness to entertain any proposals of control that may be initiated by the Dutch. Consequently, the British may be considered favorable to restriction.

The present production capacity of mature rubber acreage is around a million tons of rubber, and the excess of this potential production over demand (of under 700,000 tons) makes for continuing low prices. The financial resources of the weak estates are about exhausted and their only hope seems to lie in renewal of restriction; they are naturally favorable to Government control.

There is a pressing need for revenue on the part of all the colonial governments concerned, and the British debt to America is a further consideration. A leading British rubber trade paper in January advocated control of rubber as a means of paying the British debt to America with rubber at whatever enhanced prices can be brought about through control of exports.

In the future, estates with budgrafted trees or other high yielding strains seem destined to be supreme in rubber production, but at present only a small percentage of the planted area consists of such trees. Consequently new planting on a large scale would be necessary to complete the evolution, and it is argued that only through Government control can funds be obtained to accomplish this, because capital cannot be attracted under present conditions.

Economists in general have been sympathetic to the idea of production control. Professor Whittlesey of Princeton, says that unsatisfactory as was the experience with the Stevenson scheme, it does not demonstrate that government control of production must fail. Dr. Rowe of the London and Cambridge Economic Service did not hesitate in 1931 to predict a resumption of rubber control, perhaps at no distant date. The Inspector General of Agriculture in Indo-China, in late 1932, predicted ultimate renewal of restriction.

Furthermore, we can not be blind to the desire of governments the world over to improve the purchasing power of their nationals, and in particular agricultural producers, in order to in turn revive manufacturing industries. There is some evidence that rubber and the series of other government and private controls which followed it in the period from 1923 to 1929 contributed to the improvement of foreign purchasing power during that period.

Finally, there is the fact that rubber production is centralized in a comparatively small section of the Middle East, largely under the control of two nations, which condition would seem to render agreement more feasible than if production were widely distributed over the earth, while at the same time, the demand for rubber is becoming more widely dispersed.

Factors Against Restriction

Against this list of items favoring renewal of restriction, there is the fact that despite 10 years of trial and error experimentation in various commodities, no past control has achieved conspicuous and continued success. If the final result of controls is merely to postpone an inevitable day of reckoning, and to aggravate maladjustment, the world would be better off without them.

The experience during the restriction scheme showed that higher prices for crude rubber encourage competitive production from uncontrolled sources, increase the use of reclaimed rubber, and may hasten the coming of synthetic rubber.

The difficulties of local administration would now be greater than in 1923-28, because there is now a much wider range in yield per acre than then. When the Stevenson scheme was put in force, the general run of rubber acreage produced only up to 350 pounds per acre, but now we have some areas producing above 800 pounds an acre. Equitable assessment of production capacity would now be extremely difficult in any country.

Difficulties of intercolonial administration cropped up under the Stevenson scheme, when only Malaya and Ceylon were concerned. With three bedfellows of entirely different nationality—for Indo-China as well as Netherlands India would now need to be included in any comprehensive scheme—the conditions would be much more favorable to similar jealousies.

Finally, American manufacturers are now in position to take prompt protective measures if restriction should be adopted. During the past four years the surplus rubber production has mostly come to the United States and is now held by our manufacturers in an amount exceeding 300,000 tons. The manufacturers could immediately create a reserve supply of fully 100,000 tons, from existing stocks and at present prices, to be used as a stabilizing influence, without any risk of such loss as attended the buying pool operations of 1926-28. Whether our manufacturers would take this action, if the occasion arose, I will not venture an opinion.

The possibility of restriction is nevertheless a live issue, and conditions of price, production, competition, and national feeling are certainly not such that any active rubber manufacturer can afford to be short on rubber at present.

While on the subject of crude rubber, I might add that the possibility of rubber being employed directly in the settlement of the British indebtedness to America has been given some recent consideration in this country, and that the subject may become a matter of intergovernment negotiation in the course of forthcoming debt discussions.

World Demand—Foreign Increase

World demand for crude rubber has held up remarkably well. There was a world decline in 1932 consumption by about 125,000 tons under the 1929 peak, but the 1932 demand was greater by about 10,000 tons than in 1931, foreign takings having exceeded the previous peak, in 1929, by 19,000 tons. Barring any renewal of restriction, assuming that Europe continues readjustment without a war, and granting further improvement in the domestic financial situation, there is at least some ground for hope that rubber consumption may continue to show annual improvement, particularly if motor car production in this country comes up to the more optimistic expectations.

Last year for the first time since 1914, the United States used less rubber than foreign countries. We have been losing in percentage of total consumption steadily since 1924, and while there may be exceptional years in which our demand will again exceed foreign takings, the trend will probably be otherwise and perhaps before many years foreign countries may be using 60% of the total.

American Exports Decline

The continued growth of foreign rubber manufacture of course has had a profound effect on American export trade in rubber goods. Accompanied as it has been by increased tariff barriers, currency fluctuations, and exchange regulations, and with constantly reduced price levels, I sometimes wonder how we export at all. The value of our rubber goods exports was 76 million dollars in 1929, 58 millions in 1930, 36 millions in 1931, and 16 millions in 1932. The business not supplied by foreign manufacture consists of varied lines and relatively small volume, and such business lends itself to mail order rather than more expensive distribution methods. Our companies are having to make over their export departments to handle business in this new manner. I expect our exports during 1933 will

exceed $12,000,000, even with slight further price recessions, because during the past eight months the rate of decline has been much less than previously.

Tariff Policy

The Secretary of Commerce stated in his March 15 public address that, while "not here suggesting any immediate or violent reduction of our tariff schedules, the time has come to cooperate with other nations, and American government representatives will adopt an attitude of real cooperation about the council table. We must give as well as receive, and there need be no fear that we ourselves will not benefit from the concessions we make for the common good." The rubber industry will no doubt see that American Government representatives and the Tariff Commission are informed concerning those rubber products on which tariff concessions by foreign governments would be of practical benefit to exporters.

International Trends

The international trade in rubber products is large and despite the decline in American exports, the quantity of international shipments, as a whole, held up well to the end of 1932. An analysis of exports from 12 leading countries which supply probably 95% of the exports indicates that the total was 190,000 tons in 1927, 230,000 in 1929 and 145,000 in 1932. Until last year the United States was the leader, accounting for 30% of the total in 1927-29, but now the United Kingdom leads with about 21% and Japan which in 1927 was seventh with 3% is now second with 18%, while the United States ranks third with less than 17%. In 1927 France ranking second, supplied 18% and Germany 9%, but in 1932 France was fourth with 11%, followed closely by Germany with 10%. Canada, which ranked fourth with 12% in 1927, was seventh with only 5% in 1932, behind Belgium.

A part of the explanation of these shifts in the export importance of leading countries lies in the development of foreign branch factories. American and French manufacturers have been more active in establishing such factories in recent years than firms of other nationalities. The factories established by these companies in England and other European countries, in Argentina, and in Australia, have not only been used to supply markets in which they are located, but the English factories particularly have been used to supply other markets. This is particularly true of the trade in tires, and accounts, in part, for the decline in American and French exports while the British volume was maintained.

Although international trade in rubber goods as a whole was 24% lower in 1932 than it was in 1927, there is one class of goods which is an outstanding exception to the general rule. That is rubber footwear. While the trade in tires was reduced 41% and in mechanical rubber goods about 44%, the trade in tennis and waterproof rubber footwear as a whole increased 56% in 1932 as compared with 1927. Rubber footwear accounted for 14% of all rubber goods shipped internationally in 1932 against only 7% in 1927. The explanation of this phenomenal increase in footwear lies in the low price at which it is being sold, and in the worldwide demand for low-priced necessities. Even our own domestic business in tennis shoes was of good volume last year.

Back in 1927 the United States with 21% and Canada with 18% were the leading suppliers of the 37,000,000 pairs shipped internationally, the balance being divided between 9 other countries. Last year Japan supplied nearly 70% and Czechoslovakia 10% of the total of 58 million pairs, Japan alone exporting more than all the countries of the world in 1927. The price per pair for total Japanese exports averaged about 26c in 1930, 21c in 1931 and only 14c in 1932. The growth in footwear trade has contributed materially to the maintenance of world rubber consumption.

Prior to 1928, with high priced rubber and cotton the factor of labor cost was less important in rubber manufacture than now, when rubber is so low in price. Japan with cheap labor took immediate advantage of the situation in producing very low-priced rubber footwear, with which she supplied first the Oriental markets at a price that placed footwear within reach of millions who previously went unshod, and then extended operations to American and European markets. Czechoslovakia, also with new factories unburdened by over-capitalization succeded through a similar policy in spreading its footwear over Europe and to the United States, but in neutral markets thus far, Czechoslovakia has seemed a less strong competitor than Japan. With factories operating at capacity, and a reasonable capitalization, which make for low overhead, the advantage of cheap labor with low-priced materials has made these two countries supreme in a trade which has expanded in spite of the depression.

Export Prices—Currency Depreciation

A study of gold prices of total exports of rubber goods from the various countries since 1927 shows that in 1932 Japanese prices were no more than 33% of what they were in 1927 and British prices only 51%, while American prices were 56%, French and Belgian 58%, German 62%, Canadian 65% and Austrian 69%. Even in 1927, Japanese export prices for rubber goods were lower than those of any other country. The price trend has been steadily downward every year since 1926, and there is some evidence that gold export prices for rubber goods will decline again, slightly, this year.

Currency depreciation has contributed to the changes in this international trade in the past year and a half. During 1932, Japan continued to quote about the same yen prices on tires as in 1931, and increased yen footwear prices only 11%, despite the 42% decline in average exchange value of the yen, while British shippers actually reduced sterling quotations an average of 10% in addition to the 22.5% depreciation in the pound. Against this, American 1932 exports had an average gold price decline of 18% under 1931, Canadian 20%, French 13%, and German 15%. It is not difficult to see why British exports of tires were increased over 1931 nor why Japanese exports of footwear and toys increased so greatly. Currency depreciation must finally result in higher prices in terms of the affected currency, but meanwhile countries with depreciated currencies have a temporary advantage, the duration of which is still uncertain.

American Rubber Goods Imports

Imports of rubber manufactures into this country until recently have not been of much importance. We have always had a liking for British golf balls and some of their high-class raincoats. Hard rubber combs from Australia and Germany have for years supplied a significant part of our domestic demand because of their low price and in spite of a high tariff. We have imported fairly large quantities of rubber toys, also rubber balls and erasers, and in the last two years this import trade has increased enough to cause some concern. While these imports were troublesome to certain sections of the industry, the first serious threat to an important section came during 1932 with the importation of over 4,000,000 pairs of tennis and other rubber footwear from Japan and Czechoslovakia, the Japan-

(*Continued on Page* 62)

Foreign Tariff Walls Against American Rubber Goods*

As Compiled by JOHN P. BUSHNELL

THE general tariff duties levied against American rubber products by Belgium, France, Germany, Italy, Japan, Holland and the British Empire accompanied the first section of this article published in the April, 1933, issue of this journal. Following is a resumé of tariffs levied by other countries. It must be understood that events in the world are happening with such startling rapidity that it is possible even before this is published some political action in some countries will have made changes in their tariff schedules. The following analysis of foreign tariff regulations, including the table previously published, covers the leading trade barriers now existing against American rubber goods.

Resume of Tariff Barriers Against American Rubber Goods

Albania—35 gold francs per 100 kilos on tires; 200 francs per 100 kilos on boots and galoshes; 400 francs on raincoats and rubberized fabrics. Plus 11% surtax, 1% port tax and 2% for "public instruction."

Argentine—35% ad valorem on tires and tubes and boots and shoes; same applies to rubberized cloth in bulk, but 60% ad valorem is assessed when made up into articles.

Austria—250 crowns, plus 14% sales tax, per 100 kilos on boots and shoes; 350 crowns plus similar sales tax on tires and tubes; hard rubber goods, 170 crowns per 100 kilos, plus sales tax.

Belgium Congo—15% ad valorem tax on all rubber goods except tires, which carry 10%.

Bolivia—$1.00 per kilo for tires and $1.50 on tubes. Approximately 10% ad valorem tax on all other rubber goods. All imports carry a 20% surtax.

Brazil—Tires and tubes, 3 to 9 milreis per kilo. Rubberized fabrics, 18 to 33 milreis. Other miscellaneous products, 14 to 33 milreis. Duty on tires also include "highway tax" of .06 milreis per kilo.

British East Africa—Including Kenya Colony, Uganda Protectorate, Zanzibar and Tanganyika, approximately 10% ad valorem.

British Guiana—30% ad valorem on footwear and fabrics; 40% on tires and 7½% on mechanical goods.

British Honduras—27½% ad valorem on all rubber goods, plus 5 cents on each package as a "package tax."

British Malaya—Rubber goods are admitted free of duty into the Straits Settlements, but the Federated Malay States assess 20% ad valorem on tires and 50 cents per pair on boots and shoes. The same rates apply in the Non-Federated Malay States.

British West Africa—Including Gambia, Gold Coast, Nigeria and Sierra Leone, 15% to 30% ad valorem, plus 5% surtax.

British West Indies—Approximately 20% on all rubber goods.

Bulgaria—Boots and shoes, 300 to 1,000 gold levas per 100 kilos; tires and tubes, 600 levas; hard rubber goods, 800 levas; mechanical goods, 200 levas. Surtax of 1/5 of total duty is also imposed.

Ceylon—15% ad valorem on all rubber goods.

Chile—Rubberized fabric schedule is highly complicated and ranges from ordinary rubber sheeting at 6 pesos per kilo to silk elastic materials taking as high a duty as 110 pesos per kilo; mechanical goods, 50 pesos per kilo up to 100 kilos, but with surtaxes on each kilo over 100; tires, 2.20 pesos per kilo; footwear, 6 to 8 pesos per pair.

China—Rubberized cotton cloth, 15% ad valorem; boots and shoes, 17½%; tires and tubes, 20%; mechanical goods, 12½%. Present conditions in North China make any definite rulings impractical.

Cuba—Tires and tubes, 32 cents per kilo; tennis footwear, approximately 50 cents per kilo, with children's shoes at lower rate; belting, 16% ad valorem. These represent preferential duties to American exporters—all others pay 20% more. Surtax of 3% to 10% and a 1½% sales tax must also be met on all goods.

Czechoslovakia—Tires and tubes are only admitted under import licenses and then at 1,000 crowns per 100 kilos; same applies to belting; footwear, 600 to 720 crowns per 100 kilos, plus 3% ad valorem.

Denmark—Tires and tubes, 80 crowns per kilo; all-rubber footwear, 50 crowns per kilo; on rubber-soled footwear, 20% ad valorem.

Egypt—Tires are assessed at 2,000 milliemes for solids and 4,000 milliemes for pneumatics per 100 kilos; mechanical goods take 10% ad valorem; rubberized fabrics, 15%, and footwear, 4 milliemes per pair. (1,000 milliemes, 1 gold Egyptian pound.)

Greece—Footwear with rubber soles, 600 drachmas per 100 kilos; galoshes, 200 drachmas; belting and mechanical goods, 40 drachmas per 100 kilos; tires, 30, and tubes, 150 drachmas per 100 kilos. A further surtax of ¾ of the total duty is assessed on all imports.

Hungary—Rubber heels and soles, 180 gold crowns per 100 kilos; galoshes, 150 crowns; tires, 220 crowns per 100 kilos, plus a luxury surtax of 13%. All other rubber goods also carry a sales tax of 2%.

Liberia—All rubber products take a general 15% ad valorem duty. In addition there is levied a tax known as the Emergency Relief Fund Tax, which is 20% of the import duties.

Mexico—Rubberized fabrics under an elaborate classification range from 1.40 pesos per legal kilo to 7.70 as in the case of elastics of artificial silk and rubber, and 12.00 pesos per legal kilo for combinations of rubber

(Continued on Page 66)

*Continued from THE RUBBER AGE, April, 1933, page 12.

Re-equip now with new and modern machinery.

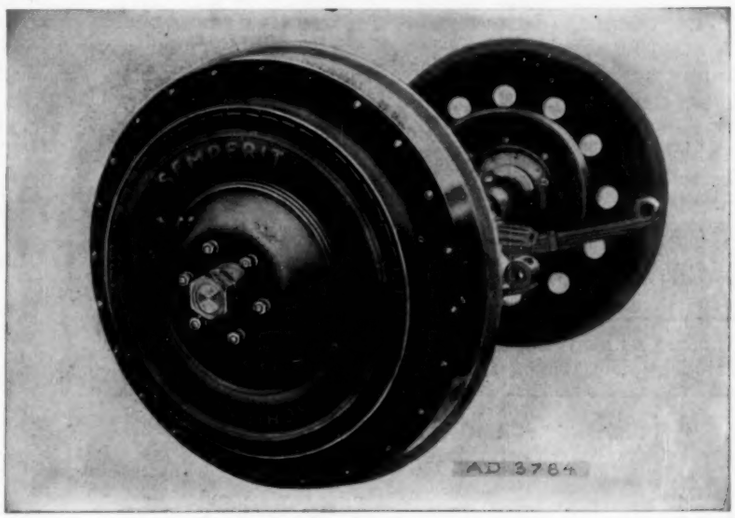
AIR SUSPENSION RAIL CAR

New Type High Speed Car Using Pneumatic Tires Within Steel Wheel To Be Demonstrated Shortly

A NEW gasoline-powered rail-car or rail-bus of a type differing from the Clark-Goodrich and the Budd-Michelin rubber-tired rail car already described in these columns, will be demonstrated shortly on the Long Island Railroad division of the Pennsylvania Railroad, according to a recent announcement. The new rail car uses what is termed Air Suspension, a system embodying a pneumatic tire rolling inside a steel guiding wheel. The tires support the load of the vehicle but do not rest on the rails. This system is being introduced in this country by E. K. Howe & Sons, New York City, after its initial development in Austria.

In describing the principles and methods of employing pneumatic tires, E. K. Howe & Sons state:

"The pneumatic tires support the load of the vehicle and transmit the propelling force to the steel tires, which guide the vehicle along the railroad track. These steel guiding or track wheels are not connected to the chassis or frame of the vehicle. Therefore, all vertical and lateral shocks are transmitted to and absorbed by the pneumatic tires, which have separate axles and leaf springs attached to the chassis frame.



Complete Wheel Set With Axles

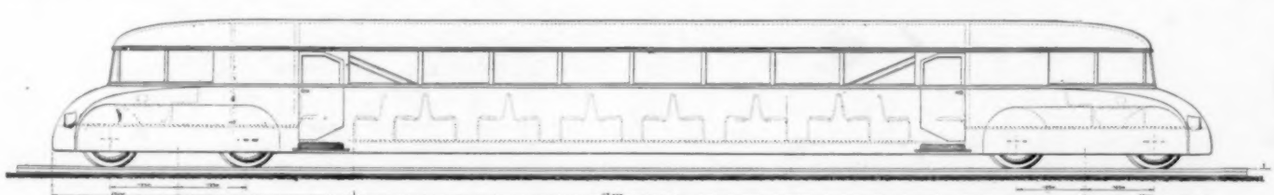
"The pneumatic tires permit the use of light weight chassis and body construction, which not only minimizes dead weight, but also absorbs shocks and vibrations, and results in the greatest riding comfort. The steel tires are employed to guide the vehicle safely along the railroad tracks and they protect the pneumatic tires against cuts and bruises.

"Pneumatic tires are responsible to a great extent for the light weight of all automotive vehicles and consequently for the light weight to pay-load ratio of trucks and buses. Realizing the importance of pneumatic tires, many attempts have been made to adapt them to railroad vehicles, particularly to rail cars. However, the direct contact of rubber tires to the railroad tracks is not a practical solution for very apparent reasons and the attempts to employ armored tires could not be successful because of the impossibility to take care of the heat expansion of rubber tires when they are rigidly enclosed within metallic rims.

"The steel guiding wheels, as will be seen from the accompanying illustration, have an internal cylindrical surface which forms the tracks of the pneumatic tire. In order to maintain a constant gauge on the steel guiding wheels, they are mounted on anti-friction bearings in pairs upon the outer ends of guiding axles. These axles have no metallic or other connection with the chassis frame which prevents the transmission of shocks or noises from the rail joints to the chassis frame.

"The pneumatic tires which support the load are mounted in pairs on anti-friction bearings on a separate axle, which transmits the load to the chassis in the usual manner by means of leaf springs. The axles carrying the track wheels have hollow ends, through which the load axle passes, thereby permitting independent movement of the two axles against each other in vertical and horizontal direction. Stops are provided to prevent excessive movement between the two axles.

"Since the pneumatic tires are not in direct contact with the rails but roll within the wide cylindrical surfaces of the track wheels, as shown in the illustration, the carrying capacity of each wheel is not limited by the width of the rail head but it can be increased to any practical desired amount. The pneumatic tire is in contact with the cylindrical track of the steel guiding wheel over approximately one-fifth of its periphery. There is therefore ample tractive contact between the pneumatic tire and the steel guiding wheel without any possibility of the pneumatic tire slipping. The driving



60 Passenger Twin Engine, 160 H.P. Express Rail Car With Air Suspension 71 Feet Overall, 80 Miles Per Hour

power, which is applied to the pneumatic tires, is therefore fully transmitted to the track wheel and then to the track. The remaining four-fifths of the tire circumference is not in contact with the track wheel and the tire is therefore free to expand and to radiate heat.

"The contact area between the tire and its track is practically twice that of the same tire rolling on a plane surface and several times larger than that of a tire in contact directly with the railhead. Since the carrying capacity of a tire increases in direct proportion with its contact area, it will be readily seen that the carrying capacity of a pneumatic tire in our system of Air Suspension is considerably more than that of any tire operating under other conditions.

"Owing to the perfect smoothness of its circular steel track and also owing to the large tractive surface between the tire and the steel track, the tire is capable of operating under ideal conditions, with the least amount of friction, abrasion and with the entire elimination of cuts and bruises, to which a tire is subjected when running on the highway or directly on rails."

It is said that tests of this rail car have developed speeds up to 90 miles an hour for the 60 passenger twin-engined 160 H.P. car and over 60 miles an hour for the 92 passenger triple-engined 160 H.P. car.

Have you investigated the possibilities of economies effected by new machinery?

Rubber Trade Outlook for 1933

(*Continued from Page* 59)

ese tennis shoes being entered at an average price under 10c a pair. After hearings, the Tariff Commission recently recommended higher import duties on rubber footwear which became effective March 3. Our imports of rubber goods averaged about 5% of the value of our exports from 1927 to 1931, but in 1932 increased to about 12% of our exports. The competitive strength of foreign manufacturers is going to endure for some time, and the possibility of a future great increase in imports of rubber goods into this country, similar to what occurred in England during the past ten years, is greater than is indicated by the imports of only two million dollars worth in 1932.

Domestic Inter-Company Competition

Our domestic rubber industry has suffered less reduction in quantity of business than most other industries, but the decline in prices has been greater than for other industries. These conditions have made for intense competition, and while the larger companies have received most publicity on this score, they are probably doing only what they must, in the struggle that is taking place, to maintain the interests of their own stockholders and employees.

It has always been true, that during a time of rising crude rubber prices, the larger manufacturers as a group held a temporary advantage over the smaller companies, while on a declining crude rubber market, the smaller manufacturers held the advantage. This is because the larger companies usually have considerable stocks and forward commitments to draw upon without raising their prices during early stages of a price rise, while the smaller companies usually maintain less extensive stocks and, buying from hand to mouth, are in position to make price concessions more quickly on a declining raw materials market. This has been as true in the current depression as it was in the period of fluctuating prices from 1925 to 1928, and the so-called price war of the large companies probably results in part from their efforts to prevent further inroads from smaller competitors.

Our official survey of rubber consumption during 1932 shows conclusively that small companies gained considerably in percentage of total business in rubber products during the year, but this is partly because the large companies absorbed all the decline in original equipment tire business.

Each company, within its individual ability, is only doing everything it can to lower costs, by reduction of wasteful methods, reduction of capital structure, and economy in every possible form. Some companies which entered the current period with a low capital structure and low stocks bettered their 1929 record of output and sales of finished products last year, and operation at full capacity reduces their overhead so as to render them constantly stronger competitors, while reduced volume and higher overhead decreases to that extent the competitive strength of other companies.

What is happening may be described as a partial decentralization of rubber manufacturing, with companies in favorable locations apparently gaining a certain supremacy in the nearby economic distribution area. This is taking place not only in the United States but throughout the world. Those companies which have been making gains in recent years and which make suitable provision for an eventual swing of the pendulum toward higher raw material costs probably will continue as important factors in the trade for many years, but they need to carefully control plant expansions. The trend has been definitely toward efficient small factories located with a view to economy in labor costs and distribution, and with low capitalization.

Summary

In summary of this discussion, my feeling is that restriction while an active possibility, is not a dangerous one, and I personally believe it will not be resorted to this year. The readjustment in rubber production has already progressed considerably, and further progress can be expected. I look for production of rubber during 1933 to be in close balance with world consumption. The trend of foreign consumption is particularly encouraging, partly resulting from growth of local foreign factories, partly from branch factory operations of leading manufacturers, and partly from growing world demand for cheap necessities which can be made out of rubber. The growth of foreign manufacture has been detrimental to American exports of rubber goods, but their rate of decline has recently slowed down; they may be aided by the new tariff policy of the administration. The depreciated currency competition cannot endure indefinitely. The prospect in the domestic industry is for continued price competition with an apparent tendency toward decentralization of rubber manufacture which is more definitely taking place in other parts of the world.

Hollow Blown Articles

Nitrogen gas, due to the fact that it is chemically inactive, is considered by many a very suitable gas to use for expanding hollow articles, such as balls, toys, and bulbs. Nitrogen gas for this purpose may be generated in such articles during the course of vulcanization, by the introduction into their interior, previous to vulcanization, of suitable amounts of ammonium chloride and sodium nitrite, with or without water (R. R. Olin Laboratories).

Get geared for greater production with the new rubber machinery now available.

Toxic Substances in the Rubber Industry—Part XXV*

TOLUENE

By P. A. DAVIS, A.B., M.A., M.D.
Assistant Medical Director, Goodyear Tire & Rubber Co.

TOLUENE is Methyl Benzene and has the formula $C_6H_5CH_3$, and structurally is

If one starts with the benzene ring and makes the following substitutions we get the chief benzol solvents:

$$C_6H_6 + CH_3 = C_6H_5CH_3 \text{ (Toluene)}$$
$$C_6H_5 + 2CH_3 = C_6H_4(CH_3)_2 \text{ (Xylene)}$$

The parent substance C_6H_6 is more toxic than either Toluene or Xylene and Toluene is more toxic than Xylene. The character of their toxicity is that of benzol only to a less active degree.

Toluene is a colorless liquid with a peculiar odor with a boiling point of 110.3°. It is used as a solvent in many industries and as a drying agent in many others. It is used to make T.N.T., in the artificial silk industry, in the dye industry and to a great extent in the rubber industry. Its use in the rubber industry is limited to its solvent powers and it is gradually being displaced by other solvents.

Commercial toluene is impure and contains thiotoluene which is toxic. Pure toluene is prepared from Balsam of Peru and the commercial toluene from coal tar. Thiotoluene is a sulphur thio derivative and produces toxic symptoms characteristic of thio bodies.

As stated above the benzene nucleus preserves the specific properties of toxicity of benzol but the toxicity becomes less, the higher the substitution of hydrocarbon radicals.

If the substitution is made by the halogen, nitro or sulpho radicals the toxicity is changed. In processes where toluene is used in conjunction with sulphur and heat is applied, especially in the vulcanization of rubber a substance with the composition $C_6H_5CH : CHC_6H_5$ is formed and is known as stilbene. This compound is toxic and care should be taken in all processes where toluene and sulphur are used together in the presence of heat. Toluene is gradually being eliminated from the rubber industry.

Avenues of entrance into the body:

1. Respiratory system.
2. Alimentary system.
3. Skin.

The percentage of absorption is greatest by the respiratory system being between 90 and 95%. The absorption by the alimentary system is what is absorbed in the saliva and liquids and foods taken by mouth. The skin absorption is a very small percentage and is present as a gaseous exchange and in those cases that wash the hands in toluene.

Symptoms

1. Slight giddiness;
2. Beginning headache;
3. Unsteady vision;
4. Nausea and vomiting;
5. Dizziness;
6. Weakness.

As absorption continues the rate of development of symptoms is more acute than in benzol and the following clinical symptoms develop:

1. Leucopenia with hemoglobin reduction;
2. Erythropenia;
3. Lymphocytosis;
4. Decreased coagulation time;
5. Decrease in anti-body formation;
6. Increased pH;
7. Decreased calcium metabolism;
8. Appearance of hematin in the urine;
9. In far advanced cases the appearance of endothelial cells and the cessation of formation of new blood cell.

With the appearance of any of these symptoms the individual should be removed at once from contact with toluene, benzol, gasoline or any other volatile substance.

The same factors which govern benzol should apply to toluene during an examination and should be cause for removal:

1. Headaches developing at mid-day or thereafter when it is known that the individual is exposed to toluene;
2. Transitory urinary disturbances;
3. Increased blood pressure;
4. Slight disturbances of equilibrium or a beginning nervous complex;
5. Slight nausea or a hyperacidity;
6. Any of the following blood changes:
   a. Reduction of white cells 1500 below normal;
   b. Reduction of red cells 10 to 15% below normal;
   c. Slight variation in coagulation time;
   d. Reduction of hemoglobin below 80%;
   e. Slight purpura or any slight hemorrhage from mucous membranes;
   f. Appearance of menstrual disturbances in female workers;
   g. Appearance of hematin in the urine.

Frequent examinations should be made of all employees working with toluene and the frequency depends entirely on the time worked and the percentage of toluene present. I should say 30 day intervals and oftener if any symptoms develop. Occasionally workers develop a dermatitis on

*Continuation of a series on Toxic Substances. Part XXIV appeared in our January 10, 1932, issue.—Editor.

the hands. This is usually due to disobedience of rules. They wash their hands in toluene to remove grease and oils.

The following procedures are useful in the control of toluene absorption:

1. Employing only healthy individuals on such jobs. Female workers should not be employed. Nephritis, diabetes, tuberculars, and individuals with hyperthyroidism should not be employed.
2. Installation of suction ventilation at low levels.
3. Use of other non-toxic solvents in the place of toluol where possible.
4. Frequent examination of workers.
5. Instruction of the supervision.
6. Cooperation of the supervision and the medical department.

If one has found any cases where there is necessity for treatment the following procedure has given good results:

1. Removal from contact with toluol.
2. Aeriation and elimination.
3. Treatment of gastric disturbances.
4. Treatment of secondary anemia by intravenous iron, liver and spleen substances. X-rays to long bones and blood transfusions.
5. Increase calcium intake. Intravenous injections of calcium gluconate.
6. Nourishing foods with plenty of fat.
7. Decrease pH content to around 7.
8. In severe cases absolute rest.

I am of the opinion that in benzol and its derivatives or in most compounds where there is a direct hydrocarbon or hydroxyl substitution there is a definite relation to the calcium metabolism. This is certainly true with benzol and I believe with toluol.

There is, according to some authorities, a definite sulphur relation in benzol absorption that is the urinary output of sulphur seem to bear some constant relation to the absorption of benzol.

Conclusion

Toluol is a definite industrial poison, but can be used with the utmost safety if the rules of ventilation and safety are followed. Employees working in toluol should be examined periodically by the medical department.

That more research on toluol will give us a better treatment, a more specific medication than we have at present.

There is a variable threshold for absorption of toluol and certain individuals should not be placed in contact with its fumes or vapors.

Porous Rubber

The porous variety of rubber which is known as "cellular" rubber is generally prepared by adding to the raw rubber some such substance as ammonia solution or solid ammonium bicarbonate. These materials, however, tend to render the final porous rubber unstable and also to decrease its life. In the present invention urea is said to be an eminently suitable material, both on account of its uniformity in action and because no injurious effects can be traced to its use. A 15 to 20 per cent addition of urea produces pores of from 0.1 to 1 mm. in diameter. Very small pores may also be obtained, and in an example 7 to 10 per cent urea is introduced into a rubber mixture, the whole being then put into flat moulds and vulcanized at 143° C. during 50 minutes. The vulcanization temperature for normal size pores is 122° C. (Brit. Pat. Spec. 388,605; Rudolf Heinrich Köppel).

Pale-Colored Vulcanized Rubber Varnishes

LITTLE has hitherto been heard of varnishes based upon rubber which has been vulcanized under high pressure, since the repulsive odor and limited solubility of the product restricted its field of application. It is therefore interesting to note that a recent German patent (No. 566,170) claims to have succeeded in producing pale-colored rubber varnishes of mild odor which are soluble in high boiling hydrocarbons, with a further advantage that synthetic vinyl compounds can be incorporated so as to give rise to impregnating varnishes for a wide range of materials. This result appears to be attained by vulcanizing natural or synthetic rubber (dissolved in suitable high boiling solvents) under pressure in presence of sulphur and calcium chloride. Chlorine liberated from the latter acts as a bleaching agent in addition to protecting the varnish against gelatinization during storage.

If vinyl chloride or vinyl acetate is introduced at the outset in the proportion of 5 to 15 per cent, gradual polymerization takes place during vulcanization with formation, as already mentioned, of interesting new impregnating varnishes.

In illustration of the process, 1,000 c.c. of petroleum distillate with a boiling range of 150 deg. to 210 deg. C. are heated with 100 gr. raw rubber, 10 to 25 gr. sulphur, and 10 to 30 gr. calcium chloride, the operation being conducted in a closed autoclave in the presence of super-heated steam. After two to three hours' heating at 135 deg. to 145 deg. C. the process is completed by raising the temperature for an hour to 180-190 deg. C. After cooling, the fully vulcanized rubber is found to have assumed the form of a colloidal dispersion which can often be directly used without filtering.

A remarkable part is played by the calcium chloride, since in its absence dark, evil-smelling products are obtained which can only be rendered at all suitable for varnish purposes by subjection to a refining process.

Performite—A New Rubber Insulation

THE Hazard Insulated Wire Works division of the Okonite Company, Wilkes-Barre, Pa., has announced a new rubber insulation meeting new specification requirements and setting a new performance test standard. The insulation is called Hazard-Performite. The manufacturers state that the Performite has been developed as an electrical rubber insulation to give super-performance in accelerated aging tests. It meets the growing demand for a specification wire having great resistance to the effects of oxygen under pressure. In the development of Performite the composition of ordinary 30 per cent rubber compounds has been modified somewhat to obtain an insulation which goes far beyond any accelerated aging test standards attained to date. This, however, has been accomplished without sacrificing the well-known electrical and mechanical characteristics of 30 per cent compounds.

Performite insulation goes far beyond the requirements of the latest A.S.T.M. accelerated aging specification D353-32-T; "Tentative Specification for Insulated Wire and Cable: Performance Rubber Compound."

For example, the A.S.T.M. specification calls for an initial minimum tensile strength of 1,200 lbs. per square inch versus 1,400 lbs. for Performite. A.S.T.M. permits 25 per cent depreciation in tensile strength in 96 hours in the bomb, whereas the Performite specification allows only 20 per cent depreciation after 336 hours, that is, three and a half times as long.

Obsolete machinery never enabled any manufacturer to meet modern competition. Re-equip now!

TIRE AND FOOTWEAR SURVEYS

Reports Show That Average Number of Tires and Pairs Of Footwear Held By Retailers Shows Decline Over 1932

TIRE STOCKS

THE regular semi-annual survey of tire stocks in hands of dealers, conducted since 1924 by the Rubber Division of the Department of Commerce, shows the following comparable statistics, as of April 1, for stocks held by independent retailers in 1933 as against 1932. The number of reports received from dealers having stocks of casings was 2,993 less than in April, 1932. The average number of automobile casings per dealer was 64.8 on April 1, 1933, compared with 66.2 a year previous.

Dealers' Stocks of Automobile Tires

	April 1, 1932			*April* 1, 1933		
	Number	*Dealers Reporting*	*Average Per Dealer*	*Number*	*Dealers Reporting*	*Average Per Dealer*
Total casings	1,590,935	24,029	66.2	1,363,758	21.036	64.8
High pressure	202,452	16,711	12.1	155,070	13,741	11.3
Inner tubes	2,193,848	24,188	90.7	1,760,488	21,311	82.6
Solids	14,589	818	17.8	11,000	595	18.5

An analysis by volume groups was prepared showing that a greater percentage of the reports fell into the groups of less than 25 casings in the present survey, compared with 1932, the percentage being 50.92% in 1933 as against 48.24% in 1932.

Dealers Classified By Volume of Stock

April 1, 1933

	Number of Dealers	*Percent of Total Dealers*	*Number of Casings*
Less than 10	4,862	23.11	23,804
10-24	5,849	27.81	93,939
25-49	4,569	21.72	158,815
50-99	3,047	14.48	208,058
100-199	1,515	7.20	205,987
200-299	469	2.23	112,337
300-399	243	1.16	83,058
400-999	352	1.67	214,193
1000 and Over	130	0.62	263,567
	21,036	100.00	1,363,758

The tendency of dealers to concentrate on a single make of tires continues to be shown clearly in the following percentage table, covering April 1 surveys from 1928 to 1933, inclusive. Less than 6 per cent of the dealers handle more than two makes now, as compared with 12.8 per cent in 1928; the percentage concentrating efforts on a single make has increased from 54.2 per cent to 70.8 per cent.

Number of Makes Handled By Dealers

(*Percentages of Total*)

No. of Makes	1928	1929	1930	1931	1932	1933
One	54.2	58.5	68.3	70.0	71.5	70.8
Two	33.0	30.7	24.9	24.0	23.6	24.0
Three	9.0	7.3	4.7	4.1	3.6	3.9
Four, Five & Six	3.8	3.5	2.1	1.9	1.3	1.3
	100.0	100.0	100.0	100.0	100.0	100.0

Mass Distributors' Stocks

This section covers the stocks reported by mail order houses, automotive supply chain stores, chains operated by certain oil companies which sell tires through their stations in several States, and retail stores owned or controlled by the principal tire manufacturing companies. Complete reports comparable with 1932 were received from all the above except the company-owned stores of four tire manufacturers; individual returns were received from 30 per cent of the stores of these four companies. The following table shows the stocks actually reported by these companies, April 1, 1933, compared with the two preceding surveys.

Mass Distributors' Reported Stocks

	April 1, 1932	*October* 1, 1932	*April* 1, 1933
Total Casings	1,592,271	2,023,929	1,503,154
Inner Tubes	1,775,194	2,109,690	1,626,003
Solid & Cushion Tires	4,509	2,285	2,017
High Pressure Casings	167,395	197,096	161,983

It is estimated that the total mass distributors' stocks of casings numbered 2,450,000 on October 1, 1932; and 1,815,000 on April 1, 1933. For April 1, 1932, the number of casings held by mass distributors in addition to the number included in manufacturers' stocks (as reported to the Rubber Manufacturers' Association) was estimated in Circular 3260 as 1,800,000, but the total comparable to the April 1, 1933, figure was approximately 1,900,000 casings, somewhat higher than current stocks. Mass distributors' stocks are thus shown to be about 635,000 less than on October 1, 1932, and about 85,000 less than on April 1, 1932. The total stocks of inner tubes held by mass distributors April 1, 1933, are estimated at 1,950,000, which compares with 2,475,000 October 1, 1932.

FOOTWEAR STOCKS

THE result of the survey of dealers stocks of waterproof rubber footwear in the United States as of March 1, 1933, made by the Rubber Division, shows that 15,952 dealers reported 4,278,106 pairs on hand, an average of 268.2 pairs per dealer, against 17,306 dealers with 5,036,574 pairs, or 291.0 pairs per dealer, on March 1, 1932. The number of dealers reporting stocks of each class of rubber footwear, the number of pairs reported, and

the average pairs per dealer, for the United States as a whole, is shown below for March 1, 1932, and March 1, 1933:

Summary of Dealers' Stocks of Waterproof Rubber Footwear

	March 1, 1932			March 1, 1933		
	No. of Dealers	*No. of Pairs*	*Prs. per Dealer*	*No. of Dealers*	*No. of Pairs*	*Prs. per Dealer*
Rubber boots	12,753	396,091	31.1	11,495	403,872	35.1
Lumbermans and pacs	6,526	168,266	25.8	5,822	135,485	23.3
Heavy arctics & gaiters	10,575	420,766	39.8	9,451	401,858	42.5
Light arctics & gaiters	9,750	513,465	52.7	8,771	395,069	45.0
Style gaiters, cloth	7,985	435,829	54.6	6,745	286,657	42.5
Style gaiters, rubber	8,179	634,861	77.6	7,481	610,223	81.6
Light & heavy rubbers	14,883	2,342,308	157.4	13,765	2,044,942	148.6
	17,306	5,036,574*	291.0	15,952	4,278,106	268.2

*This total includes 124,988 pairs of waterproof rubber footwear which were not reported by class.

As with the periodical surveys of dealers' stocks of radio equipment and automobile tires made by the Department of Commerce in recent years, this survey was made to provide basic information contributing to trade stability. The market for rubber footwear is highly seasonal and confined mostly to the winter months; demand varies with winter weather conditions; and the market is complicated by frequent changes in design and color of ladies' gaiters to correspond with more exacting style demands. Consequently, there is always uncertainty in market conditions often leading to scarcity or surplus of supplies, either of which is an economic loss divided between manufacturers, dealers, and consumers. There is a carry-over of stocks both by dealers and manufacturers at the end of every season. The present and subsequent annual surveys will help determine the extent of the normal dealer carry-over, and enable manufacturers and dealers to judge how business, during the coming season, may be affected by the carry-over, both for individual States and the country as a whole.

Taking the total number of dealers reporting stocks as 100 per cent, the percentage of dealers who reported stocks of each class of footwear is shown in Table II for March 1, 1931, March 1, 1932, and March 1, 1933. A study of the percentages shows that the proportion of dealers in each group was roughly comparable for the three dates.

Comparison of March 1, 1931, 1932 and 1933 Surveys

	Per Cent of Dealers Reporting Each Class			*Per Cent of Total Stock Reported for Each Class*		
	1931	1932	1933	1931	1932	1933
Rubber boots	76.0	73.7	72.1	8.8	8.1	9.5
Lumbermans and pacs	39.7	37.7	36.5	4.2	3.4	3.2
Heavy arctics & gaiters	63.2	61.1	59.2	9.6	8.6	9.4
Light arctics & gaiters	58.4	56.3	55.0	9.9	10.5	9.2
Style gaiters, cloth	51.7	46.2	42.3	10.0	8.9	6.7
Style gaiters, rubber	48.4	47.3	46.9	10.8	12.9	14.3
Light & heavy rubbers	86.2	86.0	86.3	46.7	47.6	47.7
Total				100.0	100.0	100.0

Foreign Tariff Walls

(*Continued from Page* 60)

with real silk. Mechanical goods are nominally taxed. Tires take 2 to 2½ pesos per kilo; footwear, .90 to 1.50 pesos per pair. There is a surtax of 3% of the total duty on all imports.

Norway—Tires take .30 crowns per kilo; belting and some mechanical goods carry 5% ad valorem, but most of this class of material is admitted free. Footwear duties range from .80 to 1.50 crowns per kilo. There is a temporary surtax of 50% of the total duty on all imports.

Panama—15% ad valorem on all rubber goods.

Russia—Pneumatic tires take 400 rubles per 100 kilos; footwear, 180 rubles per 100 kilos, plus excise tax of .60 rubles per pair; belting, 200 rubles, and hard rubber products, 400 rubles per 100 kilos. All importations must be accompanied by an import license.

Siam—Tires and tubes are subject to 33 1/3% ad valorem; mechanical goods, 5%, and all other rubber products take a general rate of 20% ad valorem as on "all other articles not otherwise specified."

Spain—Tires take 6 pesetas per kilo and tubes carry 8 pesetas. Tires and tubes, even if mounted on automobiles, must bear serial numbers corresponding to the consular invoice. Footwear, 5 pesetas per kilo; mechanical rubber goods, 3 pesetas, excepting belting, which takes 3.50 per kilo. Surtaxes to cover the differential between the silver and gold peseta are also levied.

Sweden—Footwear takes 120 crowns per 100 kilos; fabrics are listed under a wide classification and take from 25 to 400 crowns the latter applying to rubberized silk cloth per 100 kilos. Tires take 3.50 crowns per kilo.

Uruguay—Tires, 31% ad valorem; footwear,, 48%. These two rates also apply to practically all other rubber goods importations.

Preparation of Vulcanizable Latex

THE preparation of vulcanizable latex, which is described as being a latex which upon being subjected to drying out under appropriate temperature conditions results in a vulcanized rubber coagulum, is the subject of a new patent (U. S. No. 1,897,189) issued on February 14, 1933, to James B. Crockett of the Heveatex Corporation.

The patent describes the incorporation with latex of considerably more than 1% of sulphur in the form of flowers of sulphur, to which fine particle size zinc oxide may be added. When latex so treated is heated to temperatures insufficiently high to cause visible agglomeration of the rubber particles and kept at such temperatures for a comparatively short period of time, about 1% of the sulphur based on latex solids tends to remain associated with the latex in a non-subsiding condition, whereas the rest of the sulphur tends to settle out together with some zinc oxide.

The patent further states, "After the subsidence of the excess sulphur and zinc oxide from the latex which is heated in accordance with my invention, the latex may be suitably separated from the sediment. It is to be remarked that no vulcanization whatever of the latex has thus far taken place, as the temperatures employed in the heat-treatment of the latex in the absence of an accelerator are far too low to cause any vulcanization whatever. The separated latex at room temperature or thereabouts is then preferably treated with an accelerator of vulcanization, but no appreciable vulcanization of the latex is effected because room temperature is too low to give rise to a vulcanizing reaction with the amounts and types of accelerators and the amount of suspended sulphur which I employ. When a bibulous structure is impregnated with the vulcanizable latex containing an accelerator of vulcanization and the impregnated structure is then dried out at the appropriate elevated temperature, the structure becomes combined with a vulcanized rubber coagulum. It is thus seen that the heat treatment to which the latex-impregnated structure is subjected may serve two ends, viz.: first, the drying out of the structure accompanied by coagulation of the rubber; and, second, the vulcanization of the coagulated rubber or dried latex, although the drying out may be accomplished with little if any vulcanization of the rubber component, whereupon the rubber component may be vulcanized."

Get geared for greater production with the new rubber machinery now available.

Editorial Comment

Re-equip Now!

IDLE rubber equipment does not improve with age. Many rubber manufacturers have failed to keep in working condition much of their idle machinery and equipment, with the result that now that it is about to be needed, it is found to require considerable overhauling or complete replacement. Engineers should examine all of their equipment at this time—not only their special rubber machinery but all electrical, power house, machine shop and other equipment. Will the present machinery stand up under increased production demands? Or will complete replacement be necessary?

In many cases it will undoubtedly be found that present equipment—even if workable—is worn out or obsolete and can best be superseded by the newer and improved models which have been brought out by the machinery and equipment manufacturers during the depression days. If you have given no thought to this new equipment before—look into the matter now while there is still time to install it to take care of the gradually increasing production demands. Get in touch now with the machinery and equipment manufacturers and let them tell you of the many improvements in old equipment and the new models which they have brought out.

Re-equip your plant now!

Organized Safety in the Rubber Industry

AN EXCELLENT tribute to organized industrial safety was recently voiced by the Rubber Section of the National Safety Council in its News Letter to members. It recalled the old days of forty years ago when hardly any equipment was safeguarded —when accidents were considered a normal part of the day's work—and when a red bandana of doubtful sterility, wrapped around a wound, was the chief reliance against infection.

Safety rules, the statement continued, in those shops which had them, were not widely known or observed by men. Slight attention was paid to the relationship between faulty eyesight and accidents. Fire traps were common sights. Flammables were stored and handled in the same general way as other materials. Oily waste accumulated in corners. Fire exits, sprinklers (if any) and fire-fighting equipment were usually inadequate.

But during the past twenty-five years, the old order has been changed. Thousands of industrial workers and executives have given many hours of their time and thought to make jobs safer. Millions of dollars have been spent to make equipment and plants safe, and to educate employes to work safely. Today, workers who take advantage of modern safety knowledge, and who carry safety thought with them in the performance of every duty, can be reasonably assured of spending their entire working lives free from the blight of injury.

Controlled Price Agreements

FOR years industry—including rubber—has been seeking relief from the anti-trust laws so as to permit reasonable limiting of production and price fixing. Nothing however came of these private appeals with the result that many industries had to continue to show losses year after year due to the illegality of agreement on prices or production.

This condition is rapidly changing as is evidenced by statements of congressional leaders, President Roosevelt and executives who attended the recent annual meeting of the U. S. Chamber of Commerce. It is expected that shortly, with proper governmental safeguards, business will be permitted to cooperate on production and prices, provided that wages are increased with prices and that prices are not raised exorbitantly.

The rubber tire industry is sorely in need of relief of this kind and it is to be hoped that with the road now clear, all factors in the industry will get together and abide individually and collectively in any new price increases found necessary in the coming months.

Price Changes Since 1929

THE difficulty of meeting past obligations at present price levels has been so strongly emphasized that it has obscured the disturbance caused by the unequal fall of different prices, says the National Industrial Conference Board, in a new bulletin on Price Changes since 1929.

Business difficulties arise not merely from a fall in general prices, but from variations in the fall of prices of different commodities or groups of commodities. The Conference Board points out that there are prices for commodities at wholesale, for commodities at retail, and prices for services, that these classes have not fallen in the same measure, and that within each class the component elements show divergent degrees of price decline. Although the United States Bureau of Labor Statistics index of wholesale prices shows a drop of 36 per cent from 1929 to January, 1933, wide deviations from the average are revealed in individual commodities. By groups, the price change in January, 1933, varied from a drop of 59.4 per cent for farm products to a drop of only 20.5 per cent for fuel and lighting materials. By sub-groups, the movements ranged from a drop of 84.6 per cent for crude rubber to a rise of 77.9 per cent in the price of hops.

CURRENT • NEWS of the Rubber Industry

MAY, 1933

Rubber Industry Speeds up Production To Care for Increasing Trade Demands

Increase in Production Schedules for Tire and Other Rubber Plants Accompanied by Wage Raises in Some Cases—Factory Workers Recalled

SHRILLING factory whistles, late in April and early this month, announced the return to work of hundreds of rubber factory employees and an increase in production schedules of tires, mechanical goods and a number of other rubber products. This sudden spurt was attributed by factory executives to larger demands for tires due to improved financial conditions and to the usual seasonal increase at this time of the year, and the mechanical goods to resumption of industrial plants including breweries throughout the country. Other branches of the rubber industry which have increased their production are the proofed fabrics and lastex yarns.

One of the first evidences in the rubber industry of concurrence with President Roosevelt's plea for higher wages so as to increase the nation's purchasing power was the announcement by J. W. Whitehead, president of Norwalk Tire & Rubber Company on May 8 that factory workers would receive a bonus of 5% of their weekly wage effective immediately. As conditions improve it is expected that other rubber companies will follow with similar wage increases.

In the Akron territory, as early as the middle of April, a 40% increase in tire production was announced by Goodrich followed by a recall of 300 former employees of the mechanical goods division of the same company later in the month. At the Goodyear plant the tire departments were put on five-day schedules, Seiberling stepped up its production 1,000 tires a day, Firestone increased its production, Falls went on a six day-24 hour schedule and General was running to capacity on a six day-24 hour schedule with a full working force.

In other territories similar increases in production have been made recently. The Philadelphia plant of the Master Tire & Rubber Company (Quaker City Rubber) was operating at capacity on garden, fire and brewer's hose; Dayton Rubber was operating at 89% of normal capacity early this month; Corduroy at Grand Rapids, Mich., had increased tire sales 23% since the beginning of the year as compared with 1932; Lee went on a full time basis of 5 days a week.

In the East, Fisk announced that by the end of May 1,000 workers would be added and production increased from 1,500 to 6,000 tires daily by the middle of this month. It was indicated that Fisk might concentrate its sales efforts in New England for the time being.

At Providence, the plant of U. S. Rubber Company making lastex is to be enlarged to take care of increasing demands. In Fairfield, Conn., the DuPont Fabrikoid Company recalled 45 men in the past few weeks and is operating 40 hours weekly due to increase in demand for proofed fabrics for the clothing and automotive fields.

The Firestone Tire & Rubber Company announced in April that it has reopened its Los Angeles plant, closed since March 10 due to the earthquake.

Other late developments include a 10% increase in wages and a 24-hour production schedule on May 9 by the Armstrong Rubber Co., West Haven, Conn.; a 12½% salary increase for office employees on May 9 by Goodyear Tire & Rubber Co.; Seiberling went on a 24-hour, 7 days a week schedule; Pennsylvania Rubber Company announced that all office employees who had their salaries reduced some time ago had been increased to cover the previous cut.

CHICAGO GROUP HEARS TWO EXCELLENT PAPERS

The Chicago Rubber Group held its Spring meeting at the Hotel Sherman on Friday evening, April 28, with the usual large attendance. The technical part of the meeting was preceded by a dinner in the College Inn where entertainment was provided by Frank Libuse and his orchestra.

At the business meeting the following officers for 1933 were elected: Chairman, J. Kirschner; Vice-Chairman, E. Horan; Sec'y-Treas., B. W. Lewis. The new Executive Committee consists of the retiring chairman, S. Collier and Messrs. O. Urech, L. J. D. Healy, F. G. Arnold and C. E. Frick.

Get geared for greater production with the new rubber machinery now available.

A technical paper on "Cracking of Rubber When Exposed to Atmospheric Conditions" was presented by J. Kirschner, Chief Chemist of the Dryden Rubber Company. This was followed by a talk on Aviation by Thomas Wolf of the United Air Lines.

An abstract of Mr. Kirschner's paper follows:

A series of compounds were made up, cured, and each tested before and after ageing, the samples having been exposed to outside conditions during a long period of time. These sun checking tests were made on the roof of the laboratory as well as in Florida. Mr. Kirschner discussed the different compounds, going into the advantages and disadvantages of ingredients in the formula against sun checking. He proved that sun checking can be reduced by using certain oils and waxes or combinations or both. The discussion was illustrated with samples showing how far checking advanced with and without certain ingredients.

Mr. Wolf's paper emphasized the various important uses of rubber in airplane construction, followed by a moving picture entitled "Across America Flying"—a 27 hour flight across America in a 14-passenger multi-motored transport. This was a pictorial narrative of a flight from California to New York.

The next meeting of the Chicago group is scheduled for June, probably during the opening week of the World's Fair.

Chairman of Chicago Group

J. KIRSCHNER
Chief Chemist, Dryden Rubber Co.

Rubberhide Incorporated

Rubberhide Company, Inc., of Whitehead Road, Trenton, N. J., has been incorporated with 1,000 shares no par to manufacture boots and other rubber goods. Incorporators are J. E. MacDonald, Teaneck, N. J.; F. B. Williams, Jr., Elizabeth; and George B. Wood, Chestnut Hill, Pa.

New York Rubber Group Hears Two Papers On Oil and Solvent Resisting Compounds

Over 150 Listen to Papers on DuPrene and Thiokol Presented by Bridgwater and White—H. O. Caldwell Discusses Antics of Electrons

AN excellent turnout of 150 members and guests of the New York Group, Rubber Division, A. C. S., turned out Friday evening, May 5, at the club rooms of the Building Trades Employer's Ass'n., to hear three valuable papers and to enjoy an excellent dinner and entertainment by "Rubber Face Gallager." The large attendance was due undoubtedly to the excellence of the schedule of papers offered and the expectation of learning the latest developments in the use of DuPrene and Thiokol in oil and solvent resisting compounds.

In addition to the two papers on that subject, Mr. O. H. Caldwell gave a most instructive and well delivered talk on the many uses to which electrons are put in modern industry. The paper was well illustrated with about 50 slides—all of which showed to what extent electrons are finding daily application in our lives. An abstract of this paper and those on DuPrene by O. M. Hayden and E. H. Krismann of E. I. DuPont de Nemours & Co. (presented by E. R. Bridgwater) and on the Effect of Oils and Solvents on Rubber, Thiokol and DuPrene by W. L. White, Raybestos-Manhattan, Inc., follow:

Antics of the Electron

By O. H. Caldwell, Editor of Electronics, also President of the New York Electrical Society, and former Federal Radio Commissioner

Forty per cent of the people now employed work in industries which did not exist prior to the nineties, and the same ceaseless shift in industries is now taking place but at a much more rapid pace as new industries are developing based upon inventions in the field of Electricity and Electrons.

Concealed "Electric-Eye speed traps" now automatically detect cars going too fast; halftones for printing are now made without engravings, in the time taken for the Editor to write the corresponding caption; linotype machines set type directly from reporters typewritten copy without the aid of human hand; bell-less church towers now peal forth sonorous synthetic chimes; the Army band of the future is a portable amplifier; oil is located by radio; ships are navigated by invisible light; ocean depths are measured by inaudible sounds; radio waves have created bloodless surgery. These and many other examples were cited.

Thus the electron, the smallest thing in the world, becomes the most active agency in introducing new methods and industries. And yet an electron is about as much smaller than a grain of sand as the grain of sand is smaller than the earth.

The Effect of Oils and Various Chemicals on Duprene Compounds

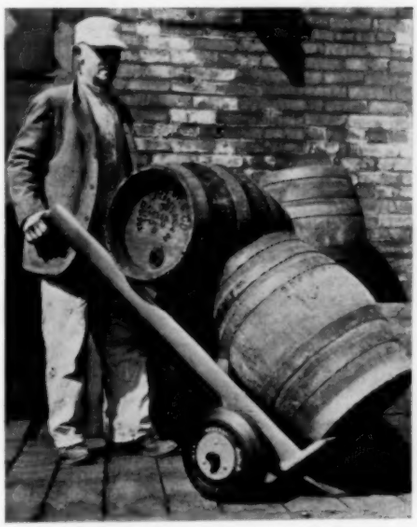
By O. M. Hayden and E. H. Krismann, Presented by E. R. Bridgwater, E. I. du Pont de Nemours & Co.

The authors showed a comparison of a typical heavily loaded oil resisting rubber stock with a similarly compounded DuPrene stock. The DuPrene compound had higher tensile strength and elongation and showed a much longer range of cure. These two stocks were immersed in a wide variety of oils and solvents including various types of crude oil, lubricating oils, kerosene, gasoline, petrolatum, benzene, creosote, carbon tetrachloride and various vegetable and animal oils. Swelling tests were conducted at room temperature and at 100° C. The results in general showed that the DuPrene compound was swollen to a much less extent than the rubber, the difference being especially marked when tests were conducted with 100° C. The authors commented particularly on the absence of sloughing off or deterioration of the DuPrene compound. The rubber compound frequently failed in this manner, especially at the higher temperature.

The authors also showed results of longer immersion tests up to two years of various DuPrene compounds in kerosene, turpentine and other solvents that cause rapid deterioration of rubber. Particular emphasis was laid on the fact that DuPrene appeared to have no tendency to disintegrate or dissolve, even when subjected to the action of such vigorous swelling agents as turpentine, over a period of a year or more.

The resistance of DuPrene to various acids and alkalis was also described and illustrated by tests.

JUMBO HAND TRUCK TIRES



Back to the good old days? Maybe. There's a smile on the face of genial William Bing as he perambulates a couple of half-barrels of 3.2 brew about one of Ohio's largest breweries. But Bill doesn't have to move the kegs of the new brew about on the heavy, unwieldy steel-wheeled hand trucks of "the good old days." Instead, he has one of the new, light, welded tubular trucks on General Streamline Jumbo, Jr., pneumatic tires, made on the principle of airplane tail-wheel tires.

Commercial Uses of Rubber, Thiokol and Duprene With Oil and Solvents

By W. L. White, Raybestos-Manhattan, Inc.

The paper was a description of the advantages and disadvantages of Rubber, Thiokol and DuPrene in resisting oils and solvents.

Rubber has many wonderful properties. It offers great resistance to many materials and finds many uses in mankind. In fact nothing is so versatile or of such importance to man. However, we find that rubber does not resist certain oils and solvents. There are many uses of rubber in the oil fields—in pipe lines for oil and gas. Automobiles use oil resisting rubber for motor supports, brakes, etc. It is used in machine shops, in the packing industry where it must resist animal oils, in the silk industry—even the farmer needs butter-fat resisting rubber. Many other industries seek oil-resisting rubbers. Hard rubber is particularly resistant to many industrial oils but soft rubber is not because it absorbs solvents. The action is physical—not chemical, as can be seen from the fact that rubber which has absorbed oil regains most of its original physical properties if the oil or solvent can be removed completely. When rubber is confined so that it cannot swell, as in sealing rings of buried pipe lines, it cannot absorb solvents and the rubber remains unaffected. As for so-called oil-proof rubbers, there are none; only some are more resistant than others.

Thiokol is hard to handle and has a strong odor but it possesses oil and solvent properties to a marked degree. None of the animal or mineral oils affect it while the vegetable oils affect it slightly. It is immune to such solvents as alcohol, ether, etc., and to acids and weak alkalis but carbon disulphide and strong alkalis should be avoided. The weaknesses of Thiokokl are that it is quite thermoplastic, softens between 150° and 200° F. and at 10° to 20° below, it stiffens up too much. Its tensile is low and abrasion is not as good as rubber, but it can be bonded to rubber to act as a protection for it ages very well.

DuPrene advantages are its high tensile, good elongation, ageing and wear resistance and its ability to withstand heat better than rubber. Its non-cold flow properties are better than Thiokol but not as good as rubber. Results of tests show that it resists gasoline, kerosene, light oils, and the common vegetable and animal oils and waxes better than rubber but not as well as Thiokol. Benzol, toluol, xylol and the "ring" series of solvents cause swelling of DuPrene about as much as rubber. DuPrene and Thiokol supplement each other, the former having better physical properties and the latter better resistance to solvents. Together they help fulfill the rubber man's dream of solvent-proof rubber.

Restriction Proposals

A London cable to the Commodity Exchange, Inc., on May 3 stated that, in reply to a question in the House of Commons regarding joint consideration of a rubber restriction scheme, the Colonial Secretary said no proposals had been made by the Netherlands government.

LEWINE ELECTED HEAD OF MERGED EXCHANGES

The new Commodity Exchange, Inc., of New York City, became operative at the opening of trading on May 1. It represents a merger of the Rubber Exchange of New York, the National Metal Exchange, the National Raw Silk Exchange and the New York Hide Exchange, the members of each of which now have full privileges of trading in any of six commodities, including also copper and tin. Membership is limited to 1,031.

Until completion of the new trading floor at 81 Broad Street, each commodity will continue to be traded on its old floor. All are expected to be brought together early in June.

At the first official meeting of the new board of governors on May 1, Jerome Lewine, partner in H. Hentz & Co., was elected first president of the exchange. He has been temporary chairman of the board of governors, and will serve until the first annual election in January, 1934.

J. Chester Cuppia, Paolino Gerli, Edward McKendrew, Ivan Reitler and Charles O. Slaughter were elected vice presidents. Other officers are Floyd Y. Keeler, treasurer; Walter Dutton, secretary; Alfred H. Korndorfer, first assistant secretary, and James J. Murphy and Henry J. Fink, assistant secretaries.

The standing committee on rubber consists of Robert Badenhop, William E. Bruyn, Marcus Rothschild, Charles Slaughter, Charles T. Wilson.

TIRE PRICE INCREASE OF 5% MADE MAY 1

The first tire price increase in nearly eight years was announced on May 1 by practically all the leading tire producers. The increase was prompted by the recent rise in rubber and cotton prices and from the continued rise in those commodities, further increases in prices can reasonably be expected during the summer until at least 25 per cent has been added to the price of tires.

The increase was approximately 5 per cent, ranging from 3½ to 7 per cent, varying with the several sizes and styles. Goodrich made the first announcement on May 1, followed closely by Goodyear, Firestone, Master, Kelly, U. S. Rubber, India, Lee, General, Dayton, Seiberling and others.

Even the mail order houses, Sears Roebuck and Montgomery Ward fell in line and raised their tire prices. At the same time Sears Roebuck announced that it is closing out its third-line tires and after August 31 would concentrate on first and second line tires only.

Gillette Shows Profit

The annual report of Ralph W. Hutchens, president of Gillette Rubber Company, Eau Claire, Wis., revealed that despite lower production than in 1931 a net profit of $31,796 was made, compared to a net loss in 1931 of $138,062. He reported production below normal but looked for a steady climb in production during the coming summer months.

Arthur Kootz, Milwaukee, has been elected a director to fill the vacancy caused by the death of his father, William T. Kootz, Milwaukee. All other directors were re-elected.

Re-equip now with new and modern machinery.

OBITUARIES

Ernest Hopkinson

Ernest Hopkinson, vice-president and Director of Development of the United States Rubber Company, a pioneer in the rubber industry, known internationally for his research work, his inventions and developments, died on May 2 at his home in New York City after six months' illness, in his sixty-first year.

Mr. Hopkinson was born in Chester, England, on May 20, 1872. Coming to this

ERNEST HOPKINSON

country as a young man, he studied law and was admitted to the bar in this city in 1895.

He had been with the United States Rubber Company since 1897, when he became patent counsel for the Peerless Rubber Company, a subsidiary later absorbed by it. In 1915 he was made patent counsel of the parent company and four years later elected vice-president. He was also a director and a member of the executive committee of the United States Rubber Company, chairman of the board of the Naugatuck Chemical Company, a director of the United States Plantations, Inc., the United States Tire Company and the Dispersions Process, Inc., as well as of other subsidiary and affiliated companies of the United States Rubber Company.

Mr. Hopkinson has been called the Father of Latex Development in this country and held many patents on the treatment and use of latex, including the patent on Lastex. He also held patents on the flat-band method of building tires, web-fabric, sprayed rubber, and others in the rubber and chemical fields.

He helped his company establish and develop its plantations in Sumatra and at one time was president of the Plantations Company. He was also active in the earlier days of plantation development in South America, a field later abandoned.

Because of his knowledge of the technical side of his many inventions and developments, he made frequent trips abroad to confer with the British, Italian and German rubber leaders.

Mr. Hopkinson was a member of the Lotos, Metropolitan, Sleepy Hollow, St. Andrew's and Maidstone Clubs.

Surviving are a widow, Bessie Barnes Hopkinson; a daughter, Mrs. Marion Brooks, and two sons, Russell and John H. Hopkinson.

L. D. Weber

Lou D. Weber, president and general manager of the Fremont Rubber Products Company, Fremont, Ohio, died Saturday, April 15th. He had been ill for ten years suffering with chronic bronchitis.

Mr. Weber was the organizer in 1924 of the Fremont Rubber Products Company, manufacturers of molded and mechanical rubber goods, and was identified as president and general manager until his death. During the past few years, however, Mr. Weber's declining health permitted him to devote only a relatively small part of his time to the industry. He was prominent in the business and industrial life of Fremont. He was one of the organizers of the Liberty Banking Company, of Fremont in 1919 and became its first cashier. He remained with this bank only a year and several years later organized the rubber company.

Mr. Weber was born near Bloomington, Ill., October 17, 1871, and moved to Ohio with his parents in 1875, settling near Cincinnati, Ohio. He attended the district schools nearby and the Cincinnati public schools, then finished his education at Lebanon College. He taught school three years after leaving college and in 1897 went to Buford, Ohio, and entered a mercantile business. Four years later he went to Columbus, Ohio, and for fifteen years was traveling salesman, representing the Scioto Buggy Company and Columbus Mercantile Company, of Columbus, and the Landis Machine Company of St. Louis, Mo. He went to Toledo, Ohio, in 1916, and acquired an interest in the National Quartz and Chemical Company, which he disposed of later and moved to Fremont. A widow and two married daughters survive.

Robert J. Metzler

Robert J. Metzler, formerly of East Orange, N. J., since 1919 president and treasurer of A. W. Faber, Inc., Newark, N. J., died on April 26 of tuberculosis at Saranac Lake, N. Y., where he had lived for the past three years. His wife died in 1930. There are no children.

Born in Wurzburg, Bavaria, Germany, fifty-six years ago, Mr. Metzler was brought to the United States as an infant. He grew up in New York and was in business there until he went to Newark in 1913. He was president of the Franklin Building Corporation of Newark, a former vice-president of the Perfection Building and Loan Association of Newark and of the Bloomfield Mortgage and Title Guarantee Company, and for more than ten years he had been president of the M. Weiss Corporation of Irvington, N. J.

Long active in the Newark Athletic Club, he had been chairman of its house committee and a member of its board of governors. He was also a former president nad a director of the Newark Kiwanis Club, which, under his leadership, built the Kiwanis cottage at the Bonnie Brae Farm for Boys at Millington, N. J.

Lion Club Visits Faultless

Members of the Ashland, Ohio, Lion's Club visited the plant of the Faultless Rubber Company on April 10 and were shown through the plant to witness the manufacture of drug sundries, toys, bathing goods, sponge rubber and other products made by the company. At a luncheon given to the Lion Club members, George Meiler, secretary and treasurer of Faultless gave a brief history of the plant and spoke of the wide variety of products made there.

U. S. Rubber Reports Business Improvement At Annual Meeting of Stockholders in April

A NOTICEABLE improvement took place in business of U. S. Rubber Company during the first two weeks of April, William de Krafft, chairman of the finance committee, told stockholders at the annual meeting on April 18.

"Our mechanical rubber goods division, which has close contact with general business, has begun to pick up, and our tire business has been quite good in the last few weeks," he said. "Automobile companies have substantially increased their orders for original equipment recently.

The company's cash balance was approximately $6,600,000, amounting to about $2,000,000, exclusive of the cash holdings of subsidiaries. On December 31 the company's cash holdings were approximately $12,300,000, of which a like amount was held by subsidiaries. The decline in cash since the first of the year was caused by seasonal expansion in inventories, by an increase in accounts receivable due to the banking holiday, and by payment of about $900,000 to meet a maturity in the 6½% notes in March, said Mr. de Krafft.

Board Reduced to 16 From 18

Sixteen retiring directors were re-elected. Victor M. Cutter and Lewis Gawtry resigned due to the press of other duties, thereby reducing the members of the board to 16 from 18.

The company's plant at Providence which manufactures "lastex" yarn is operating at capacity with orders in excess of capacity, Mr. de Krafft said. Production of the yarn will total about 3,000,000 yards in 1933, unless the productive capacity is expanded, which would compare with about 1,200,000 yards in 1932 and 200,000 yards in 1931, when the production was begun, Mr. de Krafft said. "If the note refinancing plan goes through we will spend several hundred thousands of dollars in expanding our lastex facilities to meet the demand," he declared.

Discussing the U. S. Rubber Plantations in the Far East, Mr. de Krafft said: "In 1933 I don't believe we will have a cent of cash loss from our plantations." He said that the cost of production on the plantations has been reduced to about 3 cents a pound exclusive of book charges for amortization, etc. As the cost of laying rubber down in New York from the Far East is about one-half cent, the total cash expense for the plantations' rubber output is about 3½ cents a pound or about the current market price," Mr. de Krafft declared.

Every cent of increase in the market price of crude rubber would mean an addition of $550,000 to the plantations' cash revenues for amortization and for profit, he said. Three years ago, the recognized minimum cash cost of production for rubber was 15 cents a pound and the over-all cost, including amortization, etc., was 18 cents a pound, Mr. de Krafft said.

Readjustments in the operating costs of U. S. Rubber Co. were such that at the first of the year it was believed that the company would break even for 1933 on a dollar volume of sales of about $70,000,000, or about $8,000,000 less than in 1932 when substantial cash losses were incurred.

Mr. de Krafft pointed out that while total cash holdings at the end of the year were in excess of the outstanding note issue, cash had been reduced by seasonal building up of inventories and receivables, while a minimum of $2,000,000 is required by subsidiaries and a minimum of from $4,000,000 to $5,000,000 to finance the company's own business.

Batchellor Reports Progress

Fred C. Batchellor, recently appointed to the New England technical sales staff of the Woburn Degreasing Company of Harrison, N. J., and Woburn, Mass., reports increasing business activity throughout his territory among rubber plants. Interest in the softening and plasticizing materials of the Woburn Degreasing Company are increasing as they have been found to decrease compounding costs as well as adding many desirable properties to the stock. Mr. Batchellor is making his headquarters at his firms Woburn plant.

GENERAL TIRE SALES SCHOOL

Anticipating greatly increased demand for automobile tires with the recent upturn in commodity prices generally, about 200 General Tire dealers and their salesmen attended the April sales school held at the main offices of The General Tire and Rubber Company at Akron. W. O'Neil, president of General, sales officials and tire engineering experts addressed various sessions of the school, which continued for three days and a trip of inspection was made through the company's factory. In the above group are shown part of the dealers and salesmen who attended this school, the largest single school ever held by the company

GOODRICH RE-ELECTS ALL PRESENT OFFICERS

James D. Tew was re-elected president of The B. F. Goodrich Company at the annual meeting of the board of directors in New York City, May 3. J. J. Newman was elected a vice-president. Newman had been an assistant to the president since last April.

The board meeting followed the annual meeting of stockholders at which Charles C. McCain, George M. Moffett, R. S. Rauch, J. D. Tew, W. D. Ticknor and T. B. Tomkinson were re-elected directors.

The entire executive roster of the company was renamed by the directors at their meeting. Those re-elected, in addition to Mr. Tew, are: David M. Goodrich, chairman of the board; C. B. Raymond, vice-president; W. A. Means, vice-president; S. B. Robertson, vice-president and general manager, tire division; J. H. Connors, vice-president and general manager, mechanical division; T. G. Graham, vice-president; B. F. Stauffer, general manager, sundries division; S. M. Jett, secretary; V. I. Montenyohl, treasurer; T. B. Tomkinson, comptroller; A. D. Moss, director of purchases; J. L. McKnight and W. D. Eakin, assistant secretaries; L. L. Smith, assistant treasurer; W. M. Bechler, and H. V. Gaertner, assistant comptrollers.

Obsolete machinery never enabled any manufacturer to meet modern competition. Re-equip now!

U. S. RUBBER OBJECTS TO WOMEN LABOR LAWS

The United States Rubber Company may be forced to remove most of its footwear manufacturing activities to its Indiana plant unless the Connecticut Legislature allows women at its Naugatuck factory to work until midnight, company officials said on April 15, according to the *Journal of Commerce*. C. S. Ching, representing the company at a legislative Labor Committee hearing in Hartford, advocated a bill which would allow women in industries conforming to certain regulations to work beyond the present 10 o'clock legal limit.

He explained such legislation would enable his company to employ as many as one thousand additional Naugatuck women in two eight-hour shifts during seasonal peaks. Opposition was expressed by the State Labor Department and the Connecticut Labor Federation representatives.

LATEST DEVELOPMENTS IN INDIA RECEIVERSHIP

Following the appointment of Paul Weick as receiver for the India Tire & Rubber Company, Mogadore, Ohio, in March and the selection of former president W. G. Klauss as operating agent, attempts were made to file an involuntary petition in bankruptcy against the company late in April. The effort to upset the receivership was unsuccessful when on April 26 presiding Federal Judge John Paul Jones, of Cleveland, declined to act on the petition, following the overruling of a similar attempt on the previous day in the Common Pleas Court in Akron.

On April 29, C. T. Morledge resigned as sales manager and W. G. Klauss was succeeded by John T. Fisher, controller, as operating agent for the receiver. It was expected that an early reorganization of the company would be made. In the meantime Mogadore business men were preparing to offer $400,000 for the company. On May 3, a Federal receiver for the firm was asked for in the Federal Court in Cleveland but at this writing no action on this step has been taken.

As we go to press we learn that on May 8 the assets of the company were ordered sold on May 19 to a committee of Mogadore business men for $400,000 by Common Pleas Judge L. S. Pardee, of Akron, unless creditors can show why the sale should not be consummated. The judge at the same time ordered Klauss and Morledge restored to their positions as agent for the receiver and sales manager, respectively.

FIVE FISK COMPANY EXECUTIVES RESIGN

According to President Edward Levy, the following five executives of the Fisk Rubber Company, resigned effective April 31: E. S. Burke, general manager; A. F. Eggleston, former treasurer and assistant general manager; H. C. Hanson, sales manager; E. J. Samuels, advertising manager, and E. E. Dearth, general plant manager. President Levy will take over the duties as sales manager while the other positions are to be filled from the present staff. Attorney Whitfield Reid was named corporation counsel, clerk, secretary and director, at the same time.

Fall Resumes Operation

The Falls Rubber Co., Cuyaboga Falls, Ohio, operated a full force in every department on April 12, following the ending of the strike which started there three weeks ago previously.

The entire force of men and women who walked out was taken back by the company. Officials reported that "a slight increase in wages and adjustments had been pledged." A minimum scale of 15 cents an hour for women, 25 cents an hour for common labor and 30 cents an hour for pit men, has been approved.

Rubber Exchange Members

The membership of James F. Schwartz in the Rubber Exchange of New York, Inc., has been purchased by Claude W. Peters, for another, at $1,075. The membership of Benjamin Block has been purchased by John L. Julian, for another, at $1,150. Both transactions represent advances of $125 and $200, respectively, over the last previous sale.

Re-equip now with new and modern machinery.

Names in the News

New Goodrich Vice-President

J. J. NEWMAN

Less than two years after he joined the B. F. Goodrich Company, J. J. Newman, assistant to President James D. Tew, was made a vice-president. His election came on May 3 at a directors' meeting following the annual stockholders' session.

He is an accountant by profession. He went to Goodrich from Pick-Barth Holding Corporation of New York and Chicago. He is a New Yorker. He served as staff officer to General Charles G. Dawes during the World War, retiring from the service as a major. He was vice-president of Stanley Corporation prior to its merger with Warner Brothers.

C. DUDLEY WILSON, secretary-treasurer of the Luzerne Rubber Company, Trenton, N. J., has been elected president of the Trenton Club, to succeed Charles E. Stokes, president of the Home Rubber Company. A. Boyd Cornell, secretary of the Hamilton Rubber Company, was re-elected treasurer.

R. F. MOODY, formerly Goodrich tire production engineer, has been engaged as plant superintendent by Compania Manufactuera de Artefactos de Hule Euzkadi, Mexico City.

MARCUS L. BROWN, superintendent of Seiberling Rubber Company of Toronto, Canada, was recently elected treasurer of the Toronto section of the Society of Automotive Engineers.

T. G. GRAHAM, vice-president of the B. F. Goodrich Company, and J. C. HERBERT, asistant secretary, left Akron on April 27th on a business trip to Mexico City where they will inspect the plant of Compania Manufacturera de Artefactos de Hule Euzkadi, Mexican rubber company. Goodrich recently granted a license to Euzkadi for the manufacture of tires and tubes in Mexico but the Akron company has no financial interest in Euzkadi and will continue to supply Akron-made products to Mexican trade through its distributor in Mexico City.

R. C. DOUGLAS, of B. F. Goodrich Company, RUSSELL FIRESTONE of Firestone Tire and Rubber Company, and GEORGE OENSLAGER of B. F. Goodrich Company, were recently elected directors of the University Club, Akron.

STAUFFER APPOINTED MILLER RUBBER HEAD

Burt F. Stauffer, for the past eight years assistant superintendent of the Goodrich mechanical division, was appointed on April 12 general manager of the Miller Rubber Products Company, Inc., division of the B. F. Goodrich Company, it was announced last month by J. H. Connors, vice-president and general manager of the mechanical division of Goodrich. Stauffer succeeds R. T. Griffiths, assigned to other duties.

Mr. Stauffer started to work at Goodrich forty years ago on April 7, 1893, when he was 14 years old, his first job that of wrapping bicycle tires. It was only a short time, however, before he attracted the attention of B. G. Work, then superintendent, and later president of Goodrich, and he became Work's personal messenger boy. After five years of training under the former Goodrich president, he was named a foreman of the drug sundries division. In 1909 he became superintendent of the Faultless Rubber Company in Ashland, Ohio, but returned to Goodrich in 1912 as manager of the drug sundries department, and in 1916 he was appointed an assistant superintendent of production. He held this position until 1925 when he was made assistant general superintendent of the mechanical division, which post he held until his present appointment. He is a member of the Akron City Club and Akron Chamber of Commerce.

V. C. CARR, former Goodrich district advertising manager in Boston and the New England states, takes up special staff duties, and L. T. GREINER, former Goodrich district advertising manager in Kansas City, is assigned to the sales promotion department in Akron.

H. F. SCHIPPEL, design engineer of the B. F. Goodrich Company tire division, was a speaker at the annual meeting of the National Advisory Committee for Aeronautics at Langley Field, Va., May 4.

Viles Taken Sick

A. L. Viles, general manager of the Rubber Manufacturers' Association, Inc., was suddenly taken ill in the offices of the association in New York on Saturday, May 6, and is now in the New Rochelle, N. Y., hospital to which he has been ordered for a rest. It is hoped that Mr. Viles will be able to return to his duties shortly.

Rubber Accidents Decrease

An 8 per cent reduction in accident claims, taking into consideration an 8 per cent employment decrease, was recorded last year for the rubber industry, according to the Ohio Industrial commission.

A total of 2,411 injury and occupational disease claims were filed by the industry, according to the report. Sixteen fatalities, one permanent total disability, and 46 permanent partial disability claims were filed.

Have you investigated the possibilities of economies effected by new machinery?

New Rubber Goods

Goodyear Rubber Covered Valves

An increasing number of inner tubes this year are using rubber covered valves vulcanized on the tube in place of the typical clamped-in metal valve. The accompanying illustration shows the construction of the rubber-covered valve on tubes made by Goodyear Tire & Rubber Company.

The rubber valve is attached to the soft, tacky, uncured tube and becomes an integral part when the tubes are vulcanized in molds under high pressure. This eliminates the danger of leakage around the valve, commonly known as "high pressure leaks," which are occasionally experienced with clamped-in metal valves, due to the natural tendency of rubber to work its way out of a compressed condition, or to the failure to tighten lock nuts frequently.

With rubber valves, such nonflexible material as fabric reinforcement in the valve patch, metal bridge plates and lock nuts are not required. This greatly reduces the danger of premature failure or injury to the tube when tires are mounted on rims.

In the Goodyear rubber valves, the metal

STANDARD VALVE INSIDE
METAL CORE FOR VALVE PLUNGER EXTENDING THRU ENTIRE VALVE
NO METAL PARTS INSIDE OF TIRE TO INJURE TUBE
TIGHT FIT IN RIM PREVENTS ENTRANCE OF WATER AND DIRT, ALSO HOLDS VALVE WHEN PRESSURE IS APPLIED WITH AIR CHUCK.

plunger container is of sufficient length to permit the use of standard valve insides, to provide required metallic support and to give assurance of good unions between the rubber covering and metal. This is accomplished without interfering in any way with the necessary flexibility of the valve for accessibility when inflating on any type of wire wheel.

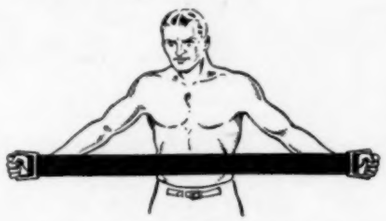
Rubber Package Holder

The Han-Del Co., of Philadelphia, have brought out a very attractive package holder to retail at 10 cents. This holder is moulded of pure rubber and is made in a number of attractive colors. It is useful in many ways, such as for school books, packages, etc. It is provided with loops which surround the books or package and are connected by a rubber segment which makes a convenient handle.

Have you investigated the possibilities of economies effected by new machinery?

Rubber Stretching Exerciser

A new exerciser, called "Handy Junior," has been introduced by the Mac-Col Mfg. Co., 4221 Olive street, St. Louis, Mo. It consists of a single piece of rubber with new



type handle at each end. The handle enables adjustment of rubber, making it necessary to have but one piece of rubber. A chart is furnished with each exerciser showing many exercisers from rowing to bag punching.

New DuPont Material

Cavalite, a new light-weight, waterproof rainwear material, has been developed by the Fabrikoid division of E. I. du Pont de Nemours & Co. The new material consists of a special rubber compound applied to a pure silk fabric in such a way that the finished product is all one unit. It is an opaque fabric and has the appearance of leather with a silken sheen. Women's raincoats made of the material weigh less than a pound.

Supertwist Cord in Hose

Supertwist Cord, employed in Goodyear tires for some years, is now used in garden hose made by Goodyear Tire & Rubber Company. Priced to meet the ideas of all who want high quality hose at a moderate cost, Supertwist hose is said to possess great strength and will withstand any working pressure used for lawn hose service, combined with lightness in weight, making it easy to handle.

Schrader Dual Pressure Equalizer

A new device for equalizing pressure in dual tires by permitting an automatic flow of air between the two tires at normal operating pressure has just been announced by A. Schrader's Son, Inc., Brooklyn, N. Y. The device, called No. 7474 Pressure Equalizer, in addition provides a safety valve if one of the tires goes flat and permits of

quicker inflation and servicing. The results of extended tests of the Schrader Pressure Equalizer on large bus fleet installations in various parts of the country indicate that an increase in tire mileage as high as 20 to 50 per cent is possible by use of this device.

RUBBER CONSUMPTION DROPS 16.6% IN MARCH

Consumption of crude rubber by manufacturers in the United States for March amounted to 18,047 long tons, compared with 21,638 (revised) for February this year, a decrease of 16.6%, according to the Rubber Manufacturers' Association. Consumption for March, 1932, was 27,828 long tons. Consumption for first three months 1933 amounted to 62,591 long tons, as compared with 85,802 for like period 1932.

Imports for crude rubber for March were 27,879 long tons, an increase of 47.7% over February, but 34.2% below March, 1932.

Estimated total domestic stocks of crude rubber on hand March 31 were 390,135 long tons, against February 28 stocks of 381,794 (revised). March stocks show an increase of 2.2% as compared with February this year, and 16.6% above the stocks of March 31, 1932.

Participants in the statistical compilation report 29,531 long tons of crude rubber afloat for the United States ports on March 31, compared with 32,898 on February 28, and 44,190 on March 31, 1932.

March reclaimed rubber consumption is estimated at 3,454 long tons, production 3,847, and stocks on hand March 31 at 15,496 long tons.

SHIPMENT OF TIRES DECLINE IN FEBRUARY

Shipments of pneumatic casings for the month of February amounted to 2,292,463 casings, a decrease of 11.7% under January, and 10.2% below February, 1932, according to statistics released by The Rubber Manufacturers' Association, Inc.

Production of pneumatic casings for February was 2,339,373, an increase of 3.6% over January, but 39.6% under February, 1932.

Pneumatic casings in the hands of manufacturers February 28, amounted to 7,376,946 units, an increase of 1.9% over January 31 stocks, but were 19.6% under February 29, 1932.

The actual figures are as follows:

PNEUMATIC CASINGS

	Shipments	*Production*	*Inventory*
Feb., 1933 ..	2,292,463	2,339,373	7,376,946
Jan., 1932 ..	2,596,585	2,257,846	7,236,845
Feb., 1932 ..	2,552,861	3,871,220	9,172,245

April Rubber Movement

During April, British Malaya exported a gross quantity of 36,752 tons of crude rubber, compared with 42,059 tons during March, and with 36,670 tons during April, 1932. For the four months ending with April, Malayan shipments amount to 162,974 tons, compared with 161,219 tons during the first four months of 1932.

Rubber exports to the United States totaled 16,816 tons during April, and for the four months to 66,754 tons, compared with 99,478 tons during the first four months of 1932.

Ceylon exported 4,183 tons during April to all countries compared with 4,827 tons during March, and 3,043 tons during April last year.

Obsolete machinery never enabled any manufacturer to meet modern competition. Re-equip now!

FIRESTONE LOSES IN FLATBAND TIRE SUIT

A ruling in Cleveland on April 12 by C. D. Friebolin, special master for the Federal Court, to the effect the flat-band process of making tires, patented by U. S. Rubber Company, had been infringed by the Firestone Tire & Rubber Company, may mean the payment of several million dollars in royalties by Firestone if the ruling is upheld. The ruling upheld Firestone on six of the seven patents involved but on the seventh it found in favor of U. S. Rubber Company. Exceptions are being filed by both sides before the Federal District Court in Cleveland reviews the case and arguments are expected to be held before Judge John Paul Jones. After decision is rendered in the Federal District Court an appeal may be taken to the Federal Circuit Court.

Firestone Declares Dividend

Directors of the Firestone Tire and Rubber Company declared on April 28, the regular quarterly dividend on preferred stock, fixing the distribution at $1.50 per share.

The dividend is to be paid June 1 to stockholders of record May 15. Holders of cumulative preferred six per cent stock of series A are to participate in the dividend. The last balance sheet shows 600,000 shares of this stock outstanding.

BUSINESS OPPORTUNITIES

Who Makes Round Rubber Belts?

One of our readers is in the market for a quantity of small rubber belts similar to those used on vacuum cleaners. We will be pleased to forward the names of any manufacturers making round belts of this nature, if the information is sent to us. (Editor, THE RUBBER AGE.)

Opportunity in India

A rubber planter and general merchant in Burma, India, is desirous of starting a rubber factory and in addition to asking for details on the manufacture of tires for rickshaws and Hackney carriages, soles, toys, mats and rubber goods in general, he is seeking the services of a good production man or rubber technologist capable of starting and operating such a factory. Any of our readers who are interested may write to U. Chit Tun, T.P.S., Thaton, Burma, India, for additional details of the opportunity.

Foreign Agencies Sought

Rubber manufacturers interested in securing agencies in various countries for different rubber products may address the following, all of whom have written the Editor of THE RUBBER AGE asking that their facilities be called to the attention of rubber manufacturers:

Llosent & Illing, Sargento Llagas, 24, Puerto de la Luz, Canary Islands, Spain. Interested in drug sundries, housewares, etc.

Michaely Handler, Corso Regis Pario 116, Turin, 123, Italy. Interested in rubber novelties.

O. W. Larson, Box 477, Stockholm, Sweden. All kinds of rubber goods.

REVIEW SHELF

• Monthly Review of New Books, Pamphlets, Company Catalogs, Service Bulletins, House Organs, etc., Pertinent to the Industry.

HANDBOOK OF INDUSTRIAL TEMPERATURE AND HUMIDITY MEASUREMENT AND CONTROL. By M. F. Behar. Instruments Publishing Co., Pittsburgh, Pa., 1932. Cloth. 6 x 9¼ in. 320 pp. 278 illustrations. $4.00.

Two separately titled books are here combined into one volume, namely "Temperature Measurement and Control" and "Humidity Measurement and Control." These constitute, respectively, Part Two and Part Three of the Manual of Instrumentation which the author undertook several years ago with the purpose of laying the foundation of a modernized form of industrial engineering.

The book deals with subjects of prime importance to industry: (1) Thermometry. (2) Pyrometry. (3) Automatic control of temperature. (4) Humidity measurement and control.

Of the two chapters which pertain to the four major subjects, first is a general discussion of temperature. It opens with the aspect of temperature as an industrial service condition, deals with measurement principles, describes the International Temperature Scale and classifies industrial temperature instruments. The other general chapter is on temperature recorders. Free from theory, it describes many types, including those brought out in 1932, and discusses the advantages and limitations of all types of mechanical and electrical instruments.

This work supplies up-to-date information on hundreds of instruments and formulates many principles of measurement and control, the application of which are of practical value in all industries.

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AMERICAN STANDARDS YEAR BOOK, 1932-1933 edition, published by American Standards Association, New York City, 7¾ x 10½ in., 48 pp.; paper cover; issued May 8, 1933.

The establishment during the past 12 months of 31 new national industrial standards affecting the construction, electrical, mining, oil, steel, radio, and almost every other major American industry is recorded in this report for 1932-33. The Year Book is issued as a record of the cooperative achievement of nearly 3,000 scientists and engineers representing more than 500 national technical and trade organizations in the development of a unified system of basic technical standards for industry. It reveals that this work, which was started in 1918, has gone on without abatement during the past few years despite the depression.

Among some of the new national standards listed are those for inch-millimeter conversion for industrial uses; specifications for impregnated paper insulation for lead-covered power cables; abbreviations for technical terms; engineering charts for lantern slides; requirements for flexible gas tubing and many others.

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WHITE MONEY, by Madelon Lulofs; a novel, published by The Century Co., New York. Cloth bound, 325 pp. $2.50.

This new novel, translated from the Dutch, is of particular interest to the rubber industry inasmuch as its action takes place in the tropics of Sumatra where white men struggle against the jungle, against heat and aching loneliness to wring wealth from an alien land by growing rubber. The authoress was born in Java and spent much of her life in the Dutch Colonies. Her knowledge of the country, its hardships and temptations, all make for an interesting story with an authentic background. The white men, used to the life of the jungle, feel lost when back in civilization on leave. The craving for the tropics is in their blood. With the coming of a white woman and mounting wealth due to higher rubber prices, new American and European customs are introduced and standards collapse. With the crash of Wall Street the story reaches a strong climax—and society turns upside down. The story is a candid picture of the life white men lead—and is worth reading if only to get this side of the rubber picture.

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ROBERTSON REMINDERS, April, 1933; 12 pages and cover; issued by John Robertson Co., Inc., Brooklyn, N. Y. For free distribution.

This is the first issue of this interesting house organ put out by a manufacturer of lead encasing presses, extrusion presses, pumps and other equipment used in the rubber industry. It illustrates some of the firm's machines and their application in various plants.

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LOUIS ALLIS MESSENGER, April, 1933; 24 pages. Issued by The Louis Allis Co., St. Louis, Mo. For free distribution.

This house organ, issued for the first time, contains much valuable information on the various types and styles of Allis motors used in many industries. The "first real splash-proof motor" is described—its construction and the results of splash tests—indicating its possibilities in factories where motors are exposed to excessive wetness. Other motors in the Allis line are illustrated with their application on various types of machines.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, MAY 9, 1933

Crude Rubber

IN COMMON with other commodities rubber has shown a rapid rise in quotations since our last report of April 10 when spot ribbed smoked sheets were selling in the outside market at 3 7/32 cents. Today the quotations have reached 4⅝ cents which is only slightly under the high of 4 13/16 reached on May 8. On the exchange, spot quotations have risen from 3.18 to 4.69 during the same period with a high of 4.75 on May 6. Futures are selling well above this figure, latest figures being 4.99 for October, 5.11 for December and 5.36 for April, 1934. The cause of this rapid rise was due almost entirely to the efforts of the government to raise commodity levels which was accomplished by putting a ban on gold exports which in turn depreciated the value of the dollar abroad. A stable level has not as yet been reached and after the present temporary setback, prices are expected to rise again. Quotations in the outside market and on the New York Exchange and the London and Singapore markets, as of May 9, follow:

Plantations—

Ribbed Smoked Sheets—			
Spot	—	@	.04⅝
May	—	@	.04⅝
July-Sept.	—	@	.04⅞
First Latex, crepe spot	—	@	.05⅜
Amber Crepe, No. 2	—	@	.03¾
Amber Crepe, No. 3	—	@	.03⅛
Amber Crepe, No. 4	—	@	.03½
Brown Crepe, Clean thin	—	@	.03⅛
Brown Crepe, rolled	—	@	.03½

Latex—

Liquid Latex, per gal.	.50	@	—

Paras—

Up-river, fine	—	@	.07½
Acre Bolivian, fine	—	@	.07¾
Caucho Ball, Upper	—	@	.03

Balata—

Block, Ciudad	—	@	.16

LONDON MARKET

Standard Smoked Sheets—Buyers—May 9

May	—	@	2 13/32d
June	—	@	2 5/32d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—May 9

May	—	@	2 1/32d
July-Sept.	—	@	2 1/16d

Reclaimed Rubber

A decided upturn in demand for reclaims has been shown recently by rubber manufacturers. This undoubtedly is due to the higher prices on crude as well as to increased production schedules on mechanicals and other rubber goods. Quotations are in general slightly higher than last month, as follows:

High Tensile

High Tensile Red	lb.	.05	@	.05¼
Super-Reclaim Black	lb.	.05¼	@	.05½

Shoe

Washed	lb.	.05½	@	.05⅝
Unwashed	lb.	.04¾	@	.05

Tube

No. 1 (Floating)	lb.	—	@	.06½
No. 2 (Compounded)	lb.	.04½	@	.04¾

Tires

Black	lb.	.03¾	@	.04
Black, selected tires	lb.	.04	@	.04¼
Dark Gray		.05	@	.05¼
Light Gray	lb.	.05½	@	.06
White	lb.	.06¼	@	.06½
Truck, Heavy Gravity	lb.	.05	@	.05¼
Truck, Light Gravity	lb.	.05¼	@	.05½

Miscellaneous

Mechanical blends	lb.	.03¼	@	.03½

Scrap Rubber

Scrap rubber collectors have shown a reluctance to sell their meagre stocks at this time in the expectation of higher prices in the near future based on the rising quotations of crude. Consequently scrap prices are somewhat higher, as follow:

(Prices to Consumers)

Auto tire peelings	ton	17.50	@20.00
Mixed auto	ton	6.50	@ 7.00
Clean solid truck tires	ton	25.00	@27.50
Boots and shoes	ton	16.00	@17.50
Arctics, untrimmed	ton	10.00	@12.50
Inner tubes, No. 1	lb.	.02¼	@ .02½
Inner tubes, No. 2	lb.	.01½	@ .01⅝
Inner tubes, Red	lb.	.01½	@ .01⅝

Cotton

Cotton, like rubber and other commodities has jumped by leaps and bounds since the United States placed its embargo on gold. From a closing of 6.60 c. on April 10 for spot cotton on the New York market, the price reached 8.60 on May 6 with a recession to 8.35 today. During the same period July cotton rose from 6.69 to 8.37 and October from 6.91 to 8.60. The market has been somewhat erratic in the past few days following the fluctuations of foreign exchange but a continued upward trend is looked for. Quotations as of May 9, on the New York Cotton Exchange, follow:

	May 9 High	May 9 Low	May 9 Close	April 10 Close
May	8.24	8.06	8.21	6.53
July	8.41	8.18	8.37	6.69
Oct.	8.63	8.40	8.60	6.91

Tire Fabrics

(Prices Net at the Mill)

Peeler, carded, 23/4/3	lb.	.26¼	@	—
Peeler, carded, 23/5/3	lb.	.25¼	@	—
Peeler, carded, 13/3/3	lb.	.22¼	@	—
Peeler, craded, 15/3/3	lb.	.23¼	@	—
Egyptian, carded, 23/5/8	lb.	.37¼	@	—
Egyptian, combed, 23/5/3	lb.	.42¼	@	—
CHAFERS				
Carded, American, 8 oz.	lb.	.17½	@	.18
Carded, American, 10 oz.	lb.	.17½	@	.18
Carded, American, 12 oz.	lb.	.17½	@	.18
Carded, American, 14 oz.	lb.	.17½	@	.18
LENO BREAKER				
Carded, American, 8¼ oz.	lb.	.18	@	.22
Carded, American, 10¼ oz.	lb.	.18	@	.22
SQUARE WOVEN				
Carded, American, 17¼ oz. 23-11 ply	lb.	.26	@	—
Carded, American, 17¼ oz. 10-5 ply	lb.	.17½	@	—

Sheetings

40 inch, 2.50 yard	yd.	.06	@	—
40 inch, 2.85 yard	yd.	.05⅝	@	.05¾
40 inch, 3.15 yard	yd.	.06¼	@	.06¼
40 inch, 3.60 yard	yd.	.05¼	@	.05⅜
40 inch, 3.75 yard	yd.	.05	@	—
40 inch, 4.25 yard	yd.	.04¼	@	.04½

Ducks

Enameling	lb.	.19	@	.20
Belting and Hose	lb.	.19	@	.20
Single filling, A grade	lb.	.07¾	@	.08¼
Double filling	lb.	.08¾	@	.09

Closing Prices on Rubber Exchange of New York, Inc.

No. 1B Standard Contract of 10 Tons

FROM APRIL 10 TO MAY 9, 1933

Date		Spot	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Sales
April	10	3.18	3.15	3.19	3.23	3.27	3.31	3.36	3.40	3.44	3.49	3 53	3.57	3.61	——	157
	11	3.28	3.27	3.31	3.35	3.40	3.44	3.48	3.52	3.56	3.60	3 62	3.67	3.73	——	341
	12	3.35	3.35	3.39	3.42	3.46	3.49	3.52	3.57	3.63	3.69	3.73	3.76	3.80	——	450
	13	3.70	3.70	3.71	3.80	3.85	3.89	3.94	3.99	4.03	4 07	4.10	4.12	4.14	——	593
	14	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
	15	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
	16	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
	17	3.55	3.54	3.57	3.64	3.72	3.76	3.81	3.84	3.87	3.90	3.93	3.95	3.98	——	126
	18	3.70	3.67	3.70	3.76	3.82	3.86	3.90	3.95	3.99	4.04	4.11	4.14	4.17	——	341
	19	4.18	4.08	4.12	4.19	4 26	4.34	4.42	4.47	4.51	4.57	4.66	4.69	4.72	——	1,091
	20	4.00	3.91	3.95	4.06	4.18	4.24	4.30	4.34	4.37	4 42	4.45	4.49	4.54	——	705
	21	3.70	3.60	3.65	3.72	3 80	3.89	3.98	4.05	4.08	4.13	4.16	4.21	4.25	——	532
	22	3.98	3.60	3.63	3.76	3.89	3.96	4.03	4.06	4.08	4.11	4.16	4.20	4.26	——	305
	23	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
	24	4.19	4.10	4.14	4.26	4 40	4.44	4.48	4.55	4.59	4.64	4.68	4.71	4.75	——	463
	25	4.00	3.90	3.93	4.02	4.12	4.17	4.23	4.29	4.35	4 43	4.44	4.47	4.50	——	283
	26	4.12	4.08	4.10	4.19	4 28	4.34	4.40	4.46	4.52	4.58	4.62	4.65	4.69	——	403
	27	4.12	——	4.08	4.17	4.26	4.33	4.40	4.47	4.51	4.57	4.60	4.63	4.67	——	378
	28	3.96	——	3.87	4.00	4.14	4.22	4.30	4.36	4.42	4.48	4.53	4.58	4.63	——	242
	29	4.28	——	4.19	4.32	4.45	4.52	4.59	4.66	4.72	4.80	4.85	4.90	4.96	——	253
	30	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
May	1	4.50	——	4.42	4.54	4.65	4.75	4.86	4.94	4.99	5.04	5.15	5.19	5.24	5.30	554
	2	4.39	——	4.36	4.46	4.56	4.66	4.77	4.82	4 86	4.91	4.96	5.01	5.06	5.11	243
	3	4.43	——	4.35	4.44	4.54	4.64	4.74	4.83	4.87	4.90	4.94	4.97	5.00	5.05	450
	4	4.56	——	4.52	4.62	4.72	4.80	4.88	4.91	4 99	5.06	5.10	5.15	5.20	5.25	431
	5	4.68	——	4.62	4.75	4.88	4.96	5.05	5.11	5.16	5.22	5.25	5.28	5.32	5.38	681
	6	4.75	——	4.57	4.69	4.83	4.91	5.02	5.06	5.10	5.15	5.21	5.26	5.32	5.38	216
	7	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
	8	4.73	——	4.65	4.73	4.82	4.91	5.00	5.07	5.13	5.22	5.26	5.33	5.40	5.46	382
	9	4.69	——	4.50	4.60	4.70	4.81	4.92	4.99	5.05	5.11	5.16	5.23	5.30	5.36	297

Rubber CHEMICAL Markets

NEW YORK, May 10, 1933.

ACCELERATORS

Organic

A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.67
Altax	lb.		
Captax	lb		
Cryleno	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.43
Diphenylguanidine	lb.	.33 @	.34
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.42
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.46 @	.47
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.36 @	.37
Monex	lb.	3.25 @	--
Oxynone	lb.	.68 @	.80
Phenex	lb.	.50 @	.55
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.25 @	.27
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		

Inorganic

Litharge, domestic	lb.	.05¾@	—
Magnesia, calcined,			
light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.36 @	.37
Ultramarine	lb.	.06 @	.30

Browns

Sienna, Italian	lb.	.04 @	.06
Umber, Turkey	lb.	.04 @	.06

Greens

Chrome, light	lb.	.23 @	.26
medium	lb.	.26 @	.28
dark	lb.	.28 @	.33
Chromium Oxide, bbl.	lb.	.23 @	.27

Reds

Antimony

crimson, 15/7	lb.	.40 @	—
sulfur, free	lb.	.52 @	.56
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.08¾@	—

Whites

Cryptone CB, No. 21	lb.	.06½@	.06¾
Cryptone, No. 19	lb.	.06½@	.06¾
Lithopone, Albalith	lb.	.04½@	.04¾
Lithopone, Azolith	lb.	.04½@	.04¾
Titanium oxide	lb.	.17 @	.19
Titanox B	lb.	.06 @	.06½
Titanox C	lb.	.06 @	.06½
XX Zinc Sulphide, bbls.	lb.	— @	.13

Zinc Oxide—American Process

American Azo:

ZZZ (lead free)	lb.	.05¾@	.06
ZZ (leaded)	lb.	.05½@	.05¾

Horsehead Lead Free Brand:

Selected	lb.	.05¾@	.06
Special	lb.	.05¾@	.06
XX Red	lb.	.05¾@	.06
XX	lb.	.05¾@	.06
XX Green	lb.	.05¾@	.06
Leaded Brand, Standard	lb.	.05½@	.05¾
Sterling	lb.	.05½@	.05¾
Superior	lb.	.05½@	.05¾
Lehigh	lb.	.05¼@	.05½
U. S. P., bbls.	lb.	— @	.12¾
Kadox, black label	lb.	.09⅝@	.09⅞
Blue label	lb.	.08⅝@	.08⅞
Red label	lb.	.07¼@	.07½
St. Joe, black label	lb.	.05¾@	.06
green label	lb.	.05¾@	.06
red label	lb.	.05¾@	.06

Zinc Oxide—French Process

Anaconda, lead free	lb.	.05¾@	.06
Anaconda, selected lead free	lb.	.06¼@	.06½
Florence White seal, bbls.	lb.	— @	.10⅞
Green seal	lb.	.09¾@	.09⅞
Red seal	lb.	.08⅝@	.08⅞

Yellows

Chrome	lb.	.16 @	.16½
Ocher, dom. med.	lb.	.01½@	.02

BLACKS

Arrow "Aerfloted"			
c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
Arrow "Aerfloted" Specification, c.l. f.o.b. wks., bags	lb.	.03 @	—
Bone, powdered	lb.	.05½@	.12½
Carbon, compressed	lb.	.02¾@	.07
uncompressed	lb.	.02¾@	.07
"Certified," Cabot			
c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
Spherons	lb.	.02¾@	—
"Disperso" f.o.b. La.	lb.	.028 @	.071
f.o.b. Texas	lb.	.02¾@	.07
Drop, bbls.	lb.	.05½@	.14
"Excello," compressed	lb.	.03 @	—
"Fumonex"	lb.	.02½@	.06
"Gastex"	lb.	.02½@	.06
Lampblack	lb.	.06 @	.08
"Micronex"			
c.l. f.o.b. works, bags	lb.	.03 @	—
c.l. f.o.b. works, cases	lb.	.04½@	—
less c.l. f.o.b. works	lb.	.05½@	.07
"Supreme"	lb.	.02¾@	—
Thermatomic—"P 33"	lb.	—	—
"Thermax"	lb.	—	—
United, "Dixie" and "Kosmos"			
c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
"Velvetex"	lb.	.02 @	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½@	.12
Asbestine	ton	13.40 @	14.00
Barium carbonate (98-100%)	lb.	.05 @	—
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	33.00 @	—
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	60.00 @	75.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt.	ton	60.00 @	70.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	6.00 @	7.00
Aerfloted, Suprex	ton	6.50 @	8.00
Congaree	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Par	ton		
Tensulite		15.00 @	—
Cotton Flock	lb.	.08 @	.16
Glues, extra white	lb.	.15 @	.22
medium white	lb.	.12 @	.14
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesia, carbonate	lb.	.05¾@	.06
Mica	lb.	.04 @	—
Rottonstone (powdered)	ton	23.50 @	28.00
Soapstone, powdered	ton	16.00 @	18.00
Starch, powdered	cwt.	2.34 @	—
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	.85 @	1.10
English cliffstone	cwt.	1.50 @	1.70
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.10½@	—
Zinc Stearate	lb.	.20½@	—

MINERAL RUBBER

Genasco (factory	ton	40.00 @	42.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Parmr, solid	ton	23.00 @	28.00
Pioneer. MR, sclid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	.20 @	.20½
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.08 @	.12
Stearic, double pressed	lb.	.08 @	.12
Alkalies			
Caustic Soda, 76%	cwt.	2.00 @	2.50
Soda Ash, 58% C.L.	cwt.	1.15 @	1.35
Oils			
Corn, refined, bbls.	lb.	.05½@	.06
Cottonseed, crude		.03½@	.04
Degras (c.l. 100 bbls.)	lb.	.02¾@	—
Less c.l. (10-25 bbls.)	lb.	.03 @	—
Lots less than 10 bbls.	lb.	.03¼@	—
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	.03¼@	.03½
Niger	lb.	.02¾@	.03
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.13 @	.18
Pine, steam distilled	gal.	.59 @	.61
destructively distilled	gal.	.56 @	.58
Witco Palm Oil	lb.	.07½@	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.05 @	.06
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt. bbl.		6.00 @	—
Rosin, grade K, 280 lb. bbl.		4.30 @	—
Pigmentar	gal.	.13 @	.18
Tar Retort, 50 gal.	bbl.	9.50 @	10.00
Solvents			
Acetone, pure	lb.	.08 @	.09½
Alcohol, denatured,			
No. 1 bbls.	gal.	.30½@	.41½
Benzol, 90%		.20 @	.21
Carbon, bisulfide	lb.	.05½@	.06¾
Carbon, tetrachloride	lb.	.06¼@	.07
Dipentene	gal.	.31 @	.41
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10¼
Ethylene dichloride	lb.	.06½@	.07½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.26 @	.31
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.47 @	.51
wood	gal.	.42 @	—
destructively distilled	gal.	.37 @	—
Waxes			
Beeswax, white	lb.	.30 @	.32
Carnauba	lb.	.25 @	.26
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.05 @	.06
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02 @	—
White crude scale 124/126	lb.	.02 @	—
Refined, 125/127	lb.	.02¾@	—
Refined, 128/130	lb.	.03¼@	—
Refined, 135/137	lb.	.04 @	—
Refined, 138/140	lb.	.06¾@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Flectol-A	lb.	— @	—
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.66

SPECIALTIES

Aromatics- Rodo	lb.		
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.06 @	.08
White	lb.	.08 @	.12
Brown	lb.	.07 @	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.04 @	—
Sulfur flour,			
Ref'n'd. 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1931:							
Apr.	44,536	7,712,941	7.73	2,607	528,947	9.06	41,929
May	35,526	5,886,638	7.40	2,501	418,301	7.47	33,025
June	46,233	6,918,900	6.68	2,749	440,604	7.15	43,484
July	43,469	6,023,748	6.19	1,435	223,587	6.96	42,034
Aug.	38,669	5,138,404	5.93	2,324	345,953	6.65	36,345
Sept.	38,494	4,970,324	5.76	1,362	187,431	6.14	37,132
Oct.	41,131	4,803,582	5.21	1,527	203,574	5.95	39,604
Nov.	43,345	4,742,218	4.72	1,403	198,284	6.31	43,345
Dec.	53,536	5,610,120	4.68	2,462	326,382	5.91	51,070
1932:							
Jan.	33,221	3,387,505	4.55	1,524	185,466	5.43	31,697
Feb.	27,959	2,690,250	4.29	1,915	222,584	5.19	26,044
Mar.	45,197	4,251,801	4.19	2,227	240,128	4.84	42,970
April	37,903	3,181,343	3.74	2,128	196,934	4.53	35,775
May	34,182	2,798,914	3.71	1,505	144,561	4.30	32,677
June	40,808	2,647,085	2.89	1,931	134,336	3.02	39,136
July	32,306	2,102,915	2.91	2,030	179,699	3.95	30,276
August	33,449	2,027,045	2.71	1,339	128,952	4.29	32,110
Oct.	35,096	2,436,522	3.10	1,059	98,022	4.13	34,037
Nov.	28,908	2,263,469	3.48	1,745	158,618	4.06	27,163
Dec.	31,384	2,360,061	3.34	770	66,165	3.98	30,614
1933							
Jan.	29,822	2,213,828	3.03	1,403	109,916	3.49	28,419
Feb.	22,603	1,554,086	3.12	1,244	102,129	3.73	21,359
Mar.	27,936	1,867,657	2.98	1,127	86,216	3.42	26,809

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule: Tons	Guayule: Dollars	Balata: Tons	Balata: Dollars	Jelutong: Tons	Jelutong: Dollars	Liquid Latex (1): Tons	Liquid Latex (1): Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,959	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	—	—	708	147,403	4,607	616,596	5,085	601,999
1932:								
May	—	—	42	9,863	566	68,028	141	27,449
June	—	—	38	9,483	330	47,077	309	28,800
July	—	—	26	7,934	372	52,116	218	37,327
Aug.	—	—	36	8,885	367	46,926	540	59,178
Sept.	—	—	11	2,261	216	27,265	297	46,380
Oct.	—	—	84	17,451	349	48,816	711	69,053
Nov.	—	—	134	15,983	163	20,296	526	70,785
Dec.	—	—	22	5,209	276	36,298	632	79,250
1933								
Jan.	—	—	33	7,815	357	40,586	841	100,900
Feb.	—	—	12	2,923	391	52,171	367	46,037
Mar.	—	—	45	11,963	437	56,262	539	55,731

(1) Latex import figures not available before 1924. Weight given in pounds of dry rubber contained in latex.

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1926	1927	1928	1929	1930	1931	1932	1933
Jan.	32,196	31,518	34,403	43,002	36,194	28,557	27,962	21,661
Feb.	31,136	30,137	33,702	41,594	33,302	28,797	30,011	21,638
Mar.	32,936	36,141	35,688	44,730	35,540	32,788	27,828	18,047
Apr.	32,696	35,871	32,772	47,521	39,686	33,321	25,953	—
May	29,364	34,592	37,333	49,233	39,386	37,817	29,197	—
June	28,598	33,801	37,676	43,227	34,195	37,916	39,116	—
July	27,577	29,219	37,407	41,526	29,508	31,937	28,272	—
Aug.	34,533	33,460	42,927	38,274	30,850	27,586	22,372	—
Sept.	32,904	27,214	39,882	34,707	25,515	23,638	22,491	—
Oct.	29,936	26,790	40,857	34,800	27,516	22,277	21,018	—
Nov.	28,080	26,792	37,461	27,659	23,691	22,943	21,910	—
Dec.	26,293	25,492	31,232	23,531	21,687	21,409	16,990	—
Totals	366,149	371,027	441,340	469,804	375,980	348,986	313,122	—

Figures on Quarterly Basis

Quarter	1925	1926	1927	1928	1929	1930	1931	1932
Jan./Mar.	95,263	94,301	99,216	103,558	128,565	101,610	89,652	85,309
Apr./June	104,099	87,109	103,242	103,500	139,292	112,229	107,755	92,643
July/Sept.	99,493	93,793	89,210	117,573	113,746	85,261	83,632	72,523
Oct./Dec.	85,789	83,212	80,860	117,597	84,872	72,020	65,645	64,145
Totals	384,644	358,415	372,528	442,227	466,475	371,120	346,684	314,620

Note—The Rubber Association estimates its monthly rubber consumption figues to be 80 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*	Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1925	132,930	137,105	35.6	13,203	1930	157,967	153,497	40.8	22,000
1926	180,582	164,500	45.9	23,213	1931	133,351	124,126	33.9	19,257
1932:									
Jan.	8,753	8,440	30.2	18,712	July	5,417	5,131	18.1	16,333
Feb.	8,731	8,332	27.7	18,659	Aug.	3,264	4,382	18.6	14,629
Mar.	8,613	7,420	26.7	19,721	Sept.	5,308	5,235	23.2	14,059
Apr.	5,561	5,555	21.6	21,525	Oct.	6,605	5,494	26.1	13,911
May	5,024	6,070	20.8	18,889	Nov.	6,542	5,284	23.9	14,047
June	5,923	7,081	18.0	16,870	Dec.	5,626	3,968	23.4	15,202
1933:									
Jan.	5,245	4,506	20.8	15,117	July	.....	.....	.....	.....
Feb.	4,530	4,087	18.9	15,403	Aug.	.....	.....	.....	.....
Mar.	3,847	3,454	19.1	15,496	Sept.	.....	.....	.....	.....
Apr.	.....	.....	.....	.....	Oct.	.....	.....	.....	.....
May	.....	.....	.....	.....	Nov.	.....	.....	.....	.....
June	.....	.....	.....	.....	Dec.	.....	.....	.....	.....

* Stocks on hand at the end of month or year.

(Rubber Manufacturers' Association figures raised to 100%)

U. S. Consumption of Gasoline

(In Thousands of Barrels of 42 Gallons)

	1931	1932	1933		1931	1932	1933
January	26,844	26,063	26,510	July	39,459	31,317	.....
February	26,133	25,344	23,312	August	39,459	35,207	.....
March	31,037	29,451	28,227	September	36,670	33,645	.....
April	33,400	30,252	.....	October	35,051	32,255	.....
May	35,716	31,574	.....	November	30,640	30,294	.....
June	38,375	38,766	.....	December	30,529	27,191	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

1931	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
January	—	8⅝	8⅝	—	8⅛	8⅝	8⅝	8⅝	8⅝	8⅝	—	8⅝	8⅝	8⅝	8½	—	8⅛	—	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8	8	8⅝
February	—	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	8	7⅞	7⅞	7⅞	7⅞	7⅞	—	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	8	8	7⅞
March	—	7⅝	8	8⅜	8¼	8½	8½	8½	—	8	7⅞	7⅞	7⅞	7⅞	7⅞	—	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7	7⅞
April	6⅜	6	—	—	6¼	6¼	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6	6	6	6	6½	6½	6	—	6½
May	6	6	—	—	6⅛	8½	6½	6⅜	—	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	7	6½	6½	6½	—	6½
June	6⅜	6⅜	6⅜	6⅜	6⅜	6½	6½	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	—	6⅜
July	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	6⅜	—	6⅜
August	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	5⅝	—	5⅝
September	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	—	5⅛
October	4⅝	4⅝	4⅝	—	4⅝	4⅝	4⅝	4⅝	4⅝	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4⅝	4⅝	4⅝	4⅝	4⅝	—	4⅝
November	—	4½	4½	—	4½	4½	4½	4½	—	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½	—	4½
December	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	5	5	5	5	5	5	5	—	4⅝
1932																																
January	—	—	—	4½	4½	4½	4⅝	4⅝	4⅝	—	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝
February	—	4⅜	4⅜	4⅜	4¼	4¼	4¼	—	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜
March	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜	4⅜
April	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
May	—	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
June	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝
July	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝
August	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3½	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	4⅜	3⅛
September	4¼	4¼	3⅝	3⅝	3⅝	3⅝	4⅛	4⅛	3⅝	4	3⅝	3½	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝
October	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝
November	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛
December	3⅜	3⅜	3⅜	—	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜
1933																																
January	—	—	3¼	3⅛	3⅛	3⅛	2⅞	—	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	2⅝	2⅝	2⅝	3
February	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝
March	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛
April	2⅞	—	4⅛	4⅛	4⅛	4⅛	—	4⅛	—	—	—	—	—	—	—	—	—	—	—	4	—	—	—	4¼	—	4⅛	—	—	—	—	—	4⅛
May	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121.60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1927

Month	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents	1933 Cents
Jan.	38.75	40.25	20.14	15.24	8.34	4.38	3.08
Feb.	38.25	32.75	23.97	15.85	7.70	4.03	2.95
Mar.	41.04	26.82	24.55	15.34	7.71	3.35	3.01
Apr.	40.86	18.97	21.18	14.93	6.43	3.02	3.56
May	40.76	18.99	21.46	14.24	6.49	3.09	—
June	37.25	19.59	20.64	12.45	6.35	2.66	—
July	34.87	19.40	21.30	11.24	6.37	2.89	—
Aug.	35.12	19.46	20.59	9.96	5.38	3.63	—
Sept.	33.67	18.47	20.37	8.28	5.08	3.84	—
Oct.	34.32	18.83	19.67	8.20	4.87	3.65	—
Nov.	37.58	18.26	16.62	9.01	4.65	3.44	—
Dec.	40.63	17.97	16.12	9.05	4.64	3.24	—
Average for Year	37.72	22.48	20.55	11.98	6.17	3.49	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Feb.	Mar.	Apr.	May	Day	Feb.	Mar.	Apr.	May
1	2 1/16	2 1/16	2 1/16	2 3/4	17	2 1/16	2 3/16	—	
2	2 1/16	2 1/16	—	2 11/16	18	1/8	2 1/8	2 1/2	
3	2 1/16	2 3/16	2 3/16	2 3/4	19	—	—	2 3/16	
4	2 1/8	—*	2 1/16	2 3/4	20	2 3/16	2 3/16	2 1/8	
5	—	—	2 1/16	2 11/16	21	2 3/16	2 1/8	2 3/16	
6	2 1/16	2 3/16	2 3/16	2 7/8	22	—	2 1/16	2 7/16	
7	2 1/16	2 3/16	2 1/8	—	23	2 1/16	2 3/16	—	
8	2 3/16	2 3/16	2 3/16	2 11/16	24	2 1/16	2 3/16	2 3/16	
9	2 1/8	2 3/16	—	2 11/16	25	2 1/16	2 3/16	2 11/16	
10	2 3/16	2 1/8	2 1/4		26	—	—	2 3/16	
11	2 1/8	2 1/8	2 3/16		27	2 1/16	2 3/16	2 11/16	
12	—	—	2 1/4		28	2 1/16	2 3/16	2 3/16	
13	—	2 1/8	2 11/16		29	—	2 3/16	2 11/16	
14	2 3/16	2 3/16	—		30	—	2 3/16	—	
15	2 3/16	2 3/16	—		31	—	2 1/8	—	
16	2 3/16	2 3/16	—						

Average Monthly Price Per Pound

Month	1930 Pence	1931 Pence	1932 Pence	1933 Pence	Month	1930 Pence	1931 Pence	1932 Pence	1933 Pence
Jan.	7.471	4.160	3.052	2.264	Aug.	4.880	2.385	2.654	—
Feb.	7.948	3.823	2.760	2.093	Sept.	4.075	2.524	2.485	—
Mar.	7.595	3.822	2.047	2.099	Oct.	4.023	2.898	2.425	—
Apr.	7.391	3.082	1.876	2.323	Nov.	4.440	2.890	2.518	—
May	6.926	3.035	1.825	*	Dec.	4.516	3.115	2.444	—
June	6.195	3.082	1.750	—	Average for Year	5.926	3.155	2.434	—
July	5.648	3.048	1.875	—					

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Mar.	Apr.	May	Day of Month	Mar.	Apr.	May	Day of Month	Mar.	Apr.	May
1	6.15	6.40	8.25	11	*	6.75	—	21	6.25	7.50	—
2	6.10	—	8.25	12	—	6.70	—	22	6.35	7.60	—
3	6.35	6.40	8.30	13	*	6.85	—	23	6.45	—	—
4	*	6.45	8.30	14	*	—	—	24	6.50	7.65	—
5	—	6.50	8.55	15	*	—	—	25	6.45	7.60	—
6	*	6.60	8.60	16	6.85	—	—	26	—	7.60	—
7	*	6.55	—	17	6.55	6.70	—	27	6.25	7.60	—
8	*	6.55	8.40	18	6.55	6.85	—	28	6.40	7.50	—
9	*	—	8.35	19	—	7.25	—	29	6.30	7.90	—
10	—	6.60	—	20	6.55	7.45	—	30	6.50	—	—
								31	6.30	—	—

Average Monthly Price Per Pound

	1930 Cents	1931 Cents	1932 Cents	1933 Cents		1930 Cents	1931 Cents	1932 Cents	1933 Cents
Jan.	17.21	10.27	6.65	6.23	Aug.	12.03	7.21	7.43	—
Feb.	15.62	10.96	6.85	6.05	Sept.	10.85	6.52	6.30	—
Mar.	15.13	10.90	6.86	6.39	Oct.	10.63	6.32	6.30	—
Apr.	16.39	10.19	6.16	7.02	Nov.	10.96	6.44	6.22	—
May	16.43	9.38	5.72	—	Dec.	10.02	6.24	6.00	—
June	14.48	9.05	5.22	—	Average for Year	13.57	8.56	6.41	—
July	13.10	9.28	5.87	—					

*Exchanges closed due to Bank Moratorium.

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1931	ON HAND 1932	ON HAND 1933	AFLOAT 1931	AFLOAT 1932	AFLOAT 1933	ON HAND AND AFLOAT 1931	ON HAND AND AFLOAT 1932	ON HAND AND AFLOAT 1933
Jan.	209,487	322,860	396,376	56,187	42,234	32,539	265,674	365,094	428,915
Feb.	212,833	322,711	381,794	63,680	51,728	32,898	276,513	373,845	414,692
Mar.	217,804	334,566	390,135	63,133	44,190	29,531	280,937	378,756	419,666
Apr.	228,382	343,099	.....	56,700	40,387	.....	285,082	383,486	.....
May	220,799	346,231	.....	73,564	50,453	.....	294,363	396,684	.....
June	225,536	345,702	.....	69,421	43,079	.....	294,957	388,781	.....
July	234,822	345,927	.....	66,873	37,894	.....	301,695	383,821	.....
Aug.	240,816	357,342	.....	61,469	41,282	.....	302,285	398,624	.....
Sept.	254,324	365,789	.....	62,420	46,188	.....	316,744	411,977	.....
Oct.	273,456	373,823	.....	68,427	40,176	.....	341,883	413,999	.....
Nov.	292,493	377,996	.....	77,443	40,876	.....	369,936	418,875	.....
Dec.	322,826	388,229	.....	53,940	38,360	.....	376,766	426,589	.....

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1931	1932	1933	At end of	1931	1932	1933
Jan.	81,093	67,166	36,481	July	81,317	48,842	.....
Feb.	82,265	65,942	37,182	Aug.	81,560	47,079	.....
Mar.	84,736	64,280	40,845	Sept.	79,692	44,942	.....
Apr.	86,982	61,848	41,234	Oct.	76,778	42,327	.....
May	86,726	56,089	.....	Nov.	73,911	40,606	.....
June	83,071	51,009	.....	Dec.	69,470	37,407	.....

At End of Recent Weeks

1932	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
November	42,114	41,528	40,952	41,025	
December	40,267	39,381	38,388	37,862	37,741
1933					
January	37,410	37,361	37,615	36,852	
February	37,188	37,396	37,559	37,603	
March	38,303	38,522	39,400	40,481	
April	40,845	40,498	40,019	40,547	41,234
May	41,478				

Stocks in Liverpool

1932				
August	58,019	57,762	57,542	57,448
September	58,080	57,965	58,028	58,004
October	58,261	58,209	57,831	57,568	57,702
November	57,311	57,329	57,021	56,004
December	55,774	55,311	54,841	54,907	55,056
1933				
January	57,711	52,950	53,183	52,415
February	52,232	52,434	52,799	52,955
March	53,850	53,531	53,716	53,692
April	53,989	54,305	54,762	54,521	54,336
May	55,148				

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1930	1931	1932	1933	End of	1930	1931	1932	1933
Jan.	39,727	48,802	48,850	22,525	July	45,459	51,208	17,017	.....
Feb.	44,371	49,283	46,954	21,530	Aug.	48,132	48,971	20,649	.....
Mar.	45,657	49,590	46,591	24,594	Sept.	44,015	47,025	20,415	.....
Apr.	48,473	45,868	39,663	.....	Oct.	39,930	52,132	23,158	.....
May	44,715	44,278	38,690	.....	Nov.	41,674	46,497	25,419	.....
June	42,451	47,517	19,770	.....	Dec.	45,963	45,795	25,341	.....

STOCKS IN OTHER CENTRES

End of 1932:	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Aug.	38,539	21,250	2,625	3,347	5,829
Sept.	36,346	21,040	2,246	2,834	5,823
Oct.	38,125	19,020	2,208	3,219	6,012
Nov.	36,363	21,860	2,229	3,565	5,530
Dec.	40,222	24,430	2,170	3,844	5,552
1933:					
Jan.	38,844	25,080	2,143	4,662	5,676
Feb.	37,323	28,540	2,033		6,006
Mar.	33,494				

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1928	24,247,282	81.6
1924	21,863,311	19.7	1929	24,141.502	80.3
1925	26,001,664	66.8	1930	17,364,096	80.1
1926	24,199,524	78.8	1931	11,253,800	76.7
1927	19,700,003	79.1	1932	6,004,252	78.7
1932:			1933:		
July	338,725	82.2	January	727,308	79.1
August	221,913	53.8	February	579,789	—
September	197,999	64.5	March	346,755	—
October	237,498	77.7	April	898,318	—
November	454,947	77.5			
December	558,674	80.0			

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1925	1926	1927	1928	1929	1930	1931	1932
Production	60,845	61,237	64,439	77,944	68,726	50,965	48,739	40,085
Shipments	59,262	59,002	64,059	74,296	69,395	53,638	48,151	40,260
Inventory[2]	8,142	10,456	10,264	13,624	11,838	9,003	7,775	7,644

Figures for Recent Months

	PRODUCTION 1931	1932	1933	SHIPMENTS 1931	1932	1933	INVENTORY 1931	1932	1933
Jan.	3,675	3,462	2,258	3,744	3,253	2,597	8,957	7,912	7,237
Feb.	3,985	3,871	2,539	3,402	2,553	2,292	9,536	9,172	7,377
Mar.	4,663	3,671	2,038	4,122	2,954	2,092	10,014	9,878	7,290
Apr.	4,944	3,517	.....	4,932	3,698	.....	10,031	9,846	.....
May	5,679	3,820	.....	5,415	4,258	.....	10,312	9,379	.....
June	5,672	5,643	.....	5,572	10,065	.....	10,447	4,999	.....
July	4,926	3,617	.....	5,462	2,404	.....	9,919	6,203	.....
Aug.	3,906	3,089	.....	4,960	2,655	.....	8,896	6,659	.....
Sept.	3,172	2,539	.....	3,932	3,082	.....	8,158	6,096	.....
Oct.	2,974	2,569	.....	2,852	1,799	.....	8,300	6,876	.....
Nov.	2,500	2,304	.....	2,887	1,711	.....	7,919	7,454	.....
Dec.	2,643	1,983	.....	2,781	1,819	.....	7,775	7,644	.....

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1925	1926	1927	1928	1929	1930	1931	1932
Production	82,614	76,618	70,823	80,180	68,829	52,420	48,333	36,801
Shipments	81,004	71,591	72,896	77,127	70,592	54,938	50,021	37,935
Inventory[2]	11,313	16,200	13,692	16,117	12,807	9,999	7,922	6,749

Figures for Recent Months

	PRODUCTION 1931	1932	1933	SHIPMENTS 1931	1932	1933	INVENTORY 1931	1932	1933
Jan.	3,623	3,308	2,093	4,062	3,529	2,535	9,439	7,719	6,197
Feb.	3,916	3,281	2,224	3,400	2,728	2,102	9,921	8,760	6,362
Mar.	4,450	3,502	.....	3,789	2,686	.....	10,475	9,448	.....
Apr.	4,617	3,225	.....	4,636	3,385	.....	10,413	9,441	.....
May	5,413	3,409	.....	5,281	3,867	.....	10,549	8,913	.....
June	5,358	5,279	.....	5,397	9,019	.....	10,504	5,174	.....
July	4,955	2,937	.....	5,831	2,160	.....	9,589	5,975	.....
Aug.	4,435	2,748	.....	5,301	2,503	.....	8,774	6,127	.....
Sept.	3,449	2,601	.....	4,150	3,098	.....	8,095	5,753	.....
Oct.	3,077	2,187	.....	2,813	1,658	.....	8,321	6,214	.....
Nov.	2,443	2,005	.....	2,594	1,578	.....	8,119	6,662	.....
Dec.	2,597	1,779	.....	2,767	1,724	.....	7,922	6,749	.....

(1) **Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.**

(2) **Held by manufacturers at end of period indicated.**

Automobile Production

	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932							
Jan.	119,344	98,803	20,541	3,731	3,112	619	123,075
Feb.	117,418	94,110	23,308	5,477	4,494	983	122,895
Mar.	118,959	99,399	19,560	8,318	6,604	1,714	127,277
Apr.	148,326	120,937	27,389	6,810	5,660	1,150	155,136
May	184,295	157,756	26,539	8,221	7,269	952	193,370
June	183,106	160,338	22,768	7,112	6,308	804	190,204
July	109,143	94,705	14,438	7,472	6,773	699	118,611
Aug.	90,325	75,907	14,418	4,067	3,166	901	94,391
Sept.	84,150	64,748	19,402	2,342	1,741	601	86,488
Oct.	48,702	35,107	13,595	2,923	2,361	562	51,857
Nov.	59,557	47,532	12,025	2,204	1,669	535	61,760
Dec.	107,353	86,149	21,204	2,139	1,561	578	109,542
Total	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933							
Jan.	130,044	108,326	21,718	3,358	2,921	437	133,402
Feb.	106,825	91,492	15,333	3,298	3,025	273	110,123
Mar.	118,592	100,545	18,047	6,632	5,927	705	115,224

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]						
	Gross Exports	Gross Exports Minus Imports		Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[4]	World Total[7]
1923	252,016	70,432	181,584	89,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,976	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1932:															
Jan.	42,638	10,304	32,334	4,893	732	756	460	457	5,155	8,815	8,913	1,796	831	199	65,341
Feb.	42,008	8,008	34,000	4,533	803	696	460	334	4,814	6,011	6,534	1,060	352	203	59,800
Mar.	39,903	6,658	33,245	3,462	284	501	460	217	4,946	6,863	6,299	774	715	77	57,843
Apr.	36,670	4,682	31,988	3,210	365	459	345	130	6,722	6,090	4,935	962	487	99	55,792
May	40,297	5,677	34,620	3,824	304	595	344	118	6,552	6,551	6,012	964	416	278	60,578
June	36,566	5,665	30,901	3,444	359	481	345	166	5,610	7,516	5,507	1,218	394	139	56,080
July	40,723	5,346	35,377	3,501	99	442	400	184	5,779	6,257	6,145	1,233	232	141	59,790
Aug.	39,327	7,371	31,956	4,717	129	506	400	300	4,803	4,882	7,244	1,088	303	49	56,377
Sept.	41,973	8,869	33,104	5,238	122	614	400	340	3,858	6,485	7,664	1,621	318	78	59,733
Oct.	37,931	9,798	28,133	2,945	139	583	350	428	4,022	7,051	8,944	1,147	414	247	54,403
Nov.	40,098	10,072	30,026	4,146	185	683	350	371	4,368	6,250	9,080	809	1,164	156	57,588
Dec.	40,118	10,089	30,029	5,801	367	644	350	406	4,683	7,066	8,594	1,211	824	150*	59,493
1933:															
Jan.	46,599	7,857	38,742	4,602	318	590	350	305	4,766	5,630	6,729	1,957	554	125*	64,707
Feb.	37,564	6,167	31,397	5,064	304	541	350	368	4,895	5,119	5,683	896	620	125*	55,362
Mar.	42,059	7,964	34,095	4,827	389	571	350	304	5,092	6,466	6,900	1,047		125*	
Apr.	36,752	7,758	28,994	4,183		624		235				1,053			

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown when available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abedf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,554	6,895	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,308
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,608	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,436	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	686	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,095	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,036	120,069	68,508	45,488	28,793	33,039	18,639	16,287	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1932:															
Jan.	32,028	3,243	2,588	3,303	1,746	5,782	627	3,258	622	521	479	840	462	197	55,701
Feb.	26,483	5,930	2,898	4,356	1,723	6,781	1,189	2,931	758	506	500	708	313	306	55,382
Mar.	43,361	3,585	2,482	3,436	2,588	5,398	1,423	2,745	1,211	721	112	456	359	644	68,521
Apr.	36,326	6,826	2,956	3,737	1,600	3,684	1,083	764	1,549	847	348	474	417	1,259	61,870
May	32,818	1,110	2,277	3,447	1,416	3,917	1,033	3,743	2,048	617	286	707	272	350	51,821
June	39,136	1,853	3,666	3,405	2,834	2,834	1,534	5,291	1,421	449	127	578	196	280	63,604
July	30,494	4,082	3,125	3,380	1,529	2,544	1,116	1,735	624	723	—214	784	258	1,207	51,387
Aug.	32,650	6,671	4,919	4,006	970	3,390	1,615	1,740	751	1,211	—66	611	210	557	59,235
Sept.	26,865	3,942	5,845	3,674	2,770	5,878	971	1,376	625	694	103	534	267	406	54,220
Oct.	34,748	2,927	4,715	4,177	1,207	5,653	510	1,853	569	627	553	537	489	986	59,551
Nov.	27,689	4,950	3,830	3,577	1,593	4,563	1,265	1,481	1,653	1,035	275	489	631	650	53,681
Dec.	31,246	1,182	3,205	4,623	941	5,603	2,103	3,720	745	1,298	348	544	485	2,602	57,645
1933:															
Jan.	29,260	3,277	5,858	4,241	1,189	7,611	3,005	1,558	1,275	1,388	308	640	252	838	60,700
Feb.	22,970	7,103	6,603	4,460	1,175	8,508	994		2,000		375		132	681	
Mar.	27,348	8,883		4,425	1,114	6,035					282				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.